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DISEASES CAUSED BY BACTERIA AND FUNGI

PILLET, J., ISBIR, S. & MERCIER, P. (1950.) Étude biologique des staphylocoques d'origine animale. [**Biology of staphylococci from domestic animals.**] *Ann. Inst. Pasteur.* **78.** 638-643. **293**

Forty-one staphylococcal strains isolated from animal lesions were studied and compared with strains from human sources. Almost all the animal strains were coagulase-positive and fermented mannitol like the human strains. In contrast to human strains they were all fibrinolysin-negative; they produced β-haemolysin instead of α-haemolysin; and only few of them could be typed by serological or phage methods.—A. MAYR-HARTING.

HUTSON, L. R. (1950.) **Observations on staphylococcal infections in the dairy goat.** *Vet. Rec.* **62.** 274. **294**

In mastitis in a milch goat a non-haemolytic staphylococcus was isolated from the discharges. *Staph. aureus* was isolated from an abscess in the epididymal region of a buck goat with orchitis.—ANGUS FOGGIE.

SCHALM, O. W. (1950.) **Effects of aureomycin on *Staphylococcus pyogenes* in the bovine mammary gland.** *J. Amer. vet. med. Ass.* **117.** 396-398. [Author's summary copied *verbatim*.] **295**

Twelve quarters infected with *Staphylococcus pyogenes* were treated with 400 mg. of aureomycin administered in two doses of 200 mg. each, either twelve or twenty-four hours apart. Two quarters (16·6%) became negative following treatment. Ten quarters, similarly infected, were treated with 800 mg. of aureomycin given in four doses of 200 mg. each, spaced twenty-four hours apart or, in the case of a cow milked three times daily, the doses were administered at alternating eight- and sixteen-hour intervals. In this group, four quarters (40·0%) became negative for *Staph. pyogenes*. Eleven were given 1,600 mg. of aureomycin administered in eight doses of 200 mg. each, spaced twenty-four hours apart or, in the case of one quarter, at alternating eight- and sixteen-hour intervals. *Staphylococcus pyogenes* disappeared from three of these quarters (27·2%). Of six quarters in which the infection was not eliminated following initial exposure to 400 mg. of aureomycin, two (33·3%) became negative following retreatment with a total of 1,600 mg. of aureomycin administered in eight doses at twenty-four-hour intervals; and two of four quarters that failed to respond to initial treatment with 800 mg. of aureomycin became negative for *Staph. pyogenes* on retreatment with a total of 1,600 mg. One quarter infected with coliform organisms and three quarters infected with *Pseudomonas aeruginosa* remained infected following treatment with aureomycin.

Aureomycin, as administered, did not produce results in *Staph. pyogenes* mammary infections that could be considered an improvement over results previously obtained in this same herd from penicillin infusions.

JAMIESON, S. & STUART, J. (1950.) **Streptococcal endocarditis in lambs.** *J. Path. Bact.* **62.** 235-239. [Authors' summary copied *verbatim*.] **296**

An outbreak of endocarditis in young lambs without joint lesions is reported. *Str. faecalis* was isolated from the cardiac lesions and appeared to be the causal organism.

Repeated intravenous doses of suspensions of the organism reproduced similar endocardial lesions in rabbits; single massive intravenous doses did not.

SIMON, J., SPENCER, G. R., KRAFT, M. E. & SCHENK, M. (1950.) **Sulphone and penicillin separately and combined in the treatment of streptococcic mastitis.** *J. Amer. vet. med. Ass.* **117.** 400-402. [Authors' summary copied *verbatim*.] **297**

Definite therapeutic activity *in vivo* was manifested against *Streptococcus agalactiae* by

4 : 4′ diamino diphenyl sulphone, although it was not as effective as two doses of penicillin in an oil-water vehicle. Sulphone in the form of udolac [a 33·3% suspension of sulphone] was irritating to the mammary gland. Sulphone was toxic for cats which consumed milk from treated cows. Other sulphone formulations showed moderate therapeutic activity but still were irritating to the udder.

SPENCER, G. R., KRAFT, M. E., SIMON, J. & SCHENK, M. (1950). **Antibacterial drugs in bovine mastitis.** *J. Amer. vet. med. Ass.* **117.** 414-418. [Authors' summary copied *verbatim.*] **298**

A comparison of penicillin with other drugs for intramammary therapy of bovine streptococcic mastitis disclosed that it was as efficacious as aureomycin or a combination of sulfadiazine and penicillin. Penicillin was significantly better than bacitracin and there was no synergistic action between bacitracin and penicillin.

Streptomycin, formolized gramicidin, and penicillin were only slightly irritating to the udder, while gramicidin, tyrothricin, and sulfonamides were moderately or markedly irritating. Sodium salts of several sulfonamides were markedly irritating and persisted in effective concentration less than twelve hours. Penicillin in an oil-water emulsion vehicle persisted for sixty hours in a concentration inhibitory to *Streptococcus agalactiae.*

SLANETZ, L. W. & ALLEN, F. E. (1950.) **Aureomycin in the treatment of bovine mastitis.**—*J. Amre. vet. med. Ass.* **117.** 392-395. [Authors' summary copied *verbatim.*] **299**

Aureomycin, in an ointment base, was found to be the most effective agent so far tested by the authors for the treatment of streptococcic and staphylococcic mastitis.

The following results were obtained in the treatment of streptococcic mastitis : one infusion of 200 mg. of aureomycin per quarter eliminated the infection in 212 (92·3%) of 230 quarters so treated; one infusion of 400 mg. eliminated the infection in 54 (95%) of 57 quarters so treated and three infusions of 200 mg. per quarter, administered at 48-hour intervals, freed from infection all 22 (100%) of infected quarters so treated. Particularly significant is the fact that all 22 quarters in the last group were cases of long-standing, chronic infection and all had histories of producing discoloured or stringy milk. Of these quarters, 18 had previously failed to respond when treated with large and repeated doses of penicillin. At the time of treatment, none of the cases had highly swollen or inflamed quarters.

For the treatment of staphylococcic mastitis, one infusion of 200 or 400 mg. freed from infection 47 to 55 % of the infected quarters treated. However, Staphylococcus infection was eliminated in 25 (96·1%) of 26 quarters given three infusions of aureomycin, administering 200 mg. per quarter at 48-hour intervals. Every cow in the treatment group had a well-established or chronic infection. Thus treatment of staphylococcic mastitis with aureomycin appears highly promising, but further treatment studies are necessary before final conclusions are drawn.

GOOR, S. (1948.) **Anthrax in Palestine during the years 1921-46. Epidemiological observations.** *Refuah vet.* **5.** 9. [English summary p. 32.] **300**

In Palestine the number of outbreaks during this period was highest in Sept. and Oct. Green fodder, hay and natural pasture were the sources of infection. Vaccination has proved satisfactory.—ROY MACK.

SUTTON, G. D. (1949.) **Avirulent anthrax vaccine : a method of straining to remove gross particles.** *J. S. Afr. vet. med. Ass.* **20.** 136-137. **301**

A gauze-covered thistle funnel is inverted, resting on the bottom of a flask, the stem being connected to a siphon. Vaccine in the flask is drawn out through the thistle funnel and the gross particles are removed by the gauze.

—A. MAYR-HARTING.

TUKEY, J. W., DUFOUR, E. H. & SEIBERT, F. (1950.) **Lack of sensitization following repeated skin tests with standard tuberculin (PPD-S).** *Amer. Rev. Tuberc.* **62.** 77-86. [Spanish summary. English summary copied *verbatim.*] **302**

A statistical examination of tuberculin tests made with PPD-S at approximately three-month intervals on five classes of nurses during their three-year training period shows no evidence of an increase in sensitivity due to the tuberculin. Some nurses continued to show no skin reaction even after thirty or more tests.

During the years 1942 to 1944, there were more frequent increases (61 per cent) in sensitivity from the second dose to the first dose than in the years 1944 to 1947 (10 per cent.), suggesting a higher rate of infection in the early years.

There was a considerable amount of fluctuation in the degree of sensitivity to the second

dose. Fluctuation was also expressed by frequent reversions to negative reactions, often followed by return to positive reactions.

SEIBERT, F. B. & SEIBERT, M. V. (1950.) **Significance of changes in the content of serum polysaccharide during sensitization and development of tuberculosis.** *Amer. Rev. Tuberc.* **62.** 67-76. [Spanish summary. Authors' summary copied *verbatim.*] **303**

A substance containing a polysaccharide radical has been found to increase progressively in the serum of rabbits with the development of tuberculosis. In the experiments here described, when the concentration of the substance reached a value of 80 (Klett colorimeter reading) the weight of the rabbit rapidly declined, and death usually occurred after an average of 105 days. This was true regardless of the treatment prior to infection of the rabbit.

Immunization with BCG previous to infection of the rabbits, however, greatly prolonged the period between the time of infection and the time when the serum polysaccharide concentration reached this critical value, and even occasionally allowed a rabbit to lower its polysaccharide concentration.

The polysaccharide concentration could also be increased during a series of sensitizing injections with a particular tuberculin protein (A), the properties of which are described in this paper. Simultaneously severe Arthus reactions were being produced. If the rabbits were infected when this polysaccharide value was raised, the time to reach the critical value was shortened and death occurred sooner than in the control rabbits.

Sensitization with another protein (C) also did not have an inhibiting effect upon the appearance of the serum polysaccharide during subsequent infection, as was caused by immunization with BCG.

GERNEZ-RIEUX, C. & TACQUET, A. (1950.) Réactions d'hémagglutination pratiquées comparativement avec l'antigène type Middlebrook et Dubos et avec la tuberculine précipitée. [**Haemagglutination test in diagnosis of tuberculosis.**] *Ann. Inst. Pasteur.* **78.** 550-554. **304**

The authors sensitized sheep erythrocytes by various methods with extracts of tubercle bacilli and tested their agglutination by serum of tuberculous and non-tuberculous patients and animals.—A. MAYR-HARTING.

ARENS, K. (1949.) O diagnóstico do " Mycobacterium tuberculosis " pela fluoromicroscopia. [**Fluoromicroscopy of tubercle bacilli.**] *Rev. brasil. Tuberc.* **17.** 393. [Abst. in *Amer. Rev. Tuberc.* **62.** No. 1-A. p. 19 of Absts. (1950), copied *verbatim.*] **305**

The advantages of Hagemann's method for the fluoromicroscopic demonstration of tubercle bacilli include an increased incidence of positive results, better contrast with less visual strain, easier detection of bacilli in a large field, and saving of time and effort. Auramine has proved to be the best dye for fluorescent microscopy in spite of the poor lasting quality of its solutions in tropical climates. Examination should be made in a dark room or by a dim light. The method may be used for the examination of urine, fecal, gastric, and spinal fluid specimens, and even for histologic sections.

NÉGRE, L. & BRETEY, J. (1948.) Etude expérimentale du bacille bilié de Calmette-Guérin. [**Experimental studies with BCG.**] *Pr. méd.* **56.** 407-408. **306**

A general discussion of the value of BCG vaccine. In g. pigs and rabbits, which have been given BCG by various routes, vaccinal allergy and anti-tuberculosis resistance appear. Oral administration is least successful. The parenteral route is far superior.—W. R. BETT.

HAUDUROY, P. (1947.) Une nouvelle variété de bacille tuberculeux. " *Mycobacterium tuberculosis* var *muris.*" [*Mycobact. tuberculosis* **var.** *muris*, **a new variety of the tubercle bacillus.**] *Pr. méd.* **55.** 717. **307**

A. Q. Wells's discovery of the vole bacillus is summarized and commented upon.

—W. R. BETT.

LEVADITI, C., VAISMAN, A. & LÉVY, R. (1949.) Essais concernant l'état réfractaire antituberculeux acquis chez la souris. [**Immunization of mice against TB.**] *Bull. Acad. Méd. Paris.* **133.** 267-271. **308**

Intraperitoneal injection of BCG produces in mice a refractory state as regards massive infection with *Mycobacterium tuberculosis*. Intraperitoneal infection of mice with lung tissue of infected animals previously treated with streptomycin, leads to a refractory state, shown by prolonged survival (24 days), and by scarcity of bacilli.

Cerebral inoculation of lung tissue from infected animals produces an insignificant immunizing effect.

When mice are injected intraperitoneally with virulent *Mycobact. tuberculosis*, H.512, there is a prolongation of the survival time as compared with controls.— W. R. BETT.

POPE, H. & SMITH, D. T. (1950.) **Inhibition of growth of tubercle bacilli by certain vitamin analogues.** *Amer. Rev. Tuberc.* **62.** 34-47. [Spanish summary. Part of authors' summary copied *verbatim*.] **309**

The objectives of this study were: (1) to determine whether the vitamins synthesized by the tubercle bacillus serve an essential role in the metabolism of the organism; and (2) to survey the field of the vitamin analogues for a possible effective chemotherapeutic agent, the activity of which could be accredited to a derangement of some specific metabolic function.

An attempt was made to block the synthesis or utilization of a given vitamin by the inclusion in the culture medium of analogues related structurally to the vitamin. The specificity of the inhibitory reaction produced was determined by testing the ability of a given vitamin to neutralize the inhibitory effect when both were included in the culture medium.

Seventy-nine vitamin analogues were studied including derivatives of nine of the B-complex vitamins, vitamin K, and choline. Thirteen amino acid analogues and four analogues of the purines and pyrimidines also were included. The action of 14 of the analogues could be accredited to a specific inhibition of some essential metabolic reaction. Ten of these were derivatives of *p*-aminobenzoic acid; three were related to biotin; and one to the purine, guanine. The biotin analogue, 4-(imidazolidone-2) caproic acid, prevented growth of the organism at very low concentrations. The bacteriostatic effect was completely erased by biotin.

It was concluded that: (1) *p*-Aminobenzoic acid and biotin are essential factors in the metabolism of the tubercle bacillus. (2) On the basis of the *in vitro* results obtained with 4-(imidazolidone-2) caproic acid, *in vivo* studies are indicated. (3) 4–(imidazolidone–2) caproic acid is a suitable nucleus about which other potentially bacteriostatic agents might be patterned.

SIEBENMANN, C. O. (1950.) **Streptomycin resistance of *Mycobacterium tuberculosis* and its determination by means of oleic acid—albumin agar.** *Canad. J. publ. Hlth.* **41.** 196-200. [Abst. from authors' conclusions.] **310**

In reviewing various techniques for determining streptomycin-resistance of *M. tuberculosis* the advantages offered by the use of a solid medium in the form of oleic acid—albumin agar are pointed out. As a translucent substrate of well-defined chemical composition, oleic acid—albumin agar permits easy and early detection of colonies derived from drug-resistant cells.

BRADBURY, R. H. (1950.) **Atypical Johne's disease in a cow.** *N. Amer. Vet.* **31.** 393-394. **311**

A cow was slaughtered after gradual loss of weight for two years, during which no diarrhoea was observed. Autopsy revealed marked thickening of colon and intestine and the presence of acid-fast bacilli, but the pathological and histological appearances differed from cases of Johne's disease previously encountered.—ROY MACK.

THIERY, J.-P. & LUCAS. (1950.) Rapport sur le contrôle des vaccins contre la paratuberculose et de la paratuberculine. [**Standardization of Johne's disease vaccine and of johnin.**] *Bull. Off. internat. Epiz.* **33.** 317-319. **312**

The vaccine against Johne's disease which has been used in France for 30 years consists of a suspension of live organisms in liquid paraffin, olive oil, lanolin and sand; the strains were picked out from a large number for their good antigenic qualities. From the local lesion a few organisms penetrate to the lymph nodes, but no further invasion takes place. The control for purity of the vaccine is done microscopically. "Paratuberculine" [the French johnin] is a phenolized culture filtrate and gives a positive skin test in 60% of infected animals. It is tested in animals made allergic by inoculation.—A. MAYR-HARTING.

PEARSON, J. K. L. (1950.) **The use of penicillin in the prevention of *C. pyogenes* infection of the non-lactating udder.**—*Vet. Rec.* **62.** 166-168. **313**

In a series of experiments using 3,200 dry cows and extending over three summers P. found that the injection of penicillin-in-oil into the teats during the first 14 days in July produced a significant reduction in the incidence of summer mastitis caused by *Corynebacterium pyogenes* as compared with untreated control animals.

The possibility that repeated treatments with penicillin at intervals of two or three weeks might give better results is discussed.

—ANGUS FOGGIE.

HARVEY, D. G. & LOVELL, R. (1950.) **A preliminary study of ammonia production by *Corynebacterium renale* and some other pathogenic bacteria.**—*J. gen. Microbiol.* **4.** 493-500. [Authors' summary copied *verbatim*.] **314**

Urease is a constituent enzyme of *Coryne-*

bacterium renale and appears to account for the bulk of its ammonia production. *C. renale* also contains an arginase and some amino-acid deaminases, but the former has not been fully characterized. Bovine urine supports the growth of a small inoculum of *C. renale* for a limited time but after growth has reached a maximum it diminishes rapidly and the ammonia and pH values increase. *C. renale* also contains uricase but its precise significance has not yet been determined.

Of the other bacteria studied, *C. ovis* has urease activity similar to *C. renale*, and *C. pyogenes* a stronger initial arginase. *C. equi* contains no appreciable urease or arginase, although it tends to form ammonia from glutamine.

INNES, J. R. M., BERGER, J. & FRANCIS, J. (1950.) **Subacute bacterial endocarditis with pulmonary embolism in a horse associated with Shigella equirulis.**—*Brit. vet. J.* **106.** 245-250. [Authors' summary copied *verbatim.*] 315

A case of subacute bacterial endocarditis in a horse is described which was characterized pathologically by exuberant, friable vegetations involving the semilunar valves (pulmonary artery) and by a sequel of pulmonary embolism.

Shigella [*Bact.*] *equirulis* was isolated in pure culture from the vegetations and embolus.

The endocarditis was obivously not of short duration and might have been initiated in the first place by damage to the valve during the attack of strangles ; the rôle of *Shigella* would seem undoubted as far as the terminal septicæmia is concerned.

CASTAGNOLI, B. & ANTONELLI, G. (1945.) La profilassi della pullorosi nei fagiani. [**Control of an outbreak of** *Salmonella pullorum* **in pheasants.**]—*R. C. Ist. Sanit. pubbl., Roma.* **8.** pp. 159-173. 316

S. pullorum caused high chick mortality on a pheasant farm in Italy, the origin being traced to the importation of eggs. Details are given of agglutination titres recorded and of measures by means of which the infection was controlled.—G. P. MARSHALL.

MACKERRAS, I. M. & PASK, V. M. (1949.) **Infant salmonella carriers.**—*Lancet.* **257.** 940-941. 317

In tests on 647 faecal specimens from babies under two years of age, attending the child welfare clinics of Brisbane, the authors isolated 21 strains of *Salmonella*, amongst them one *S. paratyphi* B and seven *S. typhi-murium*. These strains had not given rise to any gastro-enteritic symptoms or only to very mild ones. The epidemiological significance of these findings is discussed.—A. MAYR-HARTING.

RICE, T. B. (1947.) **Brucellosis as an occupational disease.**—*J. Amer. vet. med. Ass.* **111.** 470-473. Discussion p. 473. 318

A general discussion of the subject.

—ROY MACK.

BRUHN, P. A. (1948.) **The** *Brucella abortus* **ring test.**—*Amer. J. vet. Res.* **9.** 360-369. 319

A discussion of the literature concerning the ring test of milk for *Br. abortus* infection, and description of an antigen produced by B. which is said to be specific and more sensitive than those previously employed in this test.

—ROY MACK.

KNIGHT, V., RUIZ-SANCHEZ, F. & MCDERMOTT, W. (1950.) **Chloramphenicol in the treatment of acute manifestations of brucellosis.** —*Amer. J. med. Sci.* **219.** 627-638. [Authors' summary copied *verbatim.*] 320

The administration of chloramphenicol for a short period to 13 patients with the acute manifestations of brucellosis was followed in every instance by rapid clinical improvement. In more than one-half of the cases, however, permanent remissions of the illness failed to occur. It is believed that in an infection which may be as protracted as brucellosis, it is advisable to administer antimicrobial therapy for much longer than the 6–10 day period used in the present study.

LARSEN, P. H. & GILMAN, H. L. (1950.) **Aureomycin as a treatment of acute brucellosis of cattle.**—*Cornell Vet.* **40.** 259-272. [Authors' summary copied *verbatim.*] 321

Four mature cows, acutely affected with brucellosis, were treated with aureomycin. Each received intravenously an initial dose of 5 gm. per 1,000 pounds of body weight. The two cows which had calved within a week before the beginning of treatment continued to receive 5 gm. doses twice a day for a total of six days. Another animal, which had calved prematurely a month earlier, was given 2·5 gm. twice a day for the same number of days, and the fourth cow, a dry, nonpregnant reactor, received 2·5 gm. twice a day for 10 days.

Doses consisting of 5 gm. per 1,000 pounds of body weight every 12 hours produced only mildly toxic symptoms such as partial anorexia and scanty elimination. Concentrations of aureomycin in the whey and blood were found to reach levels at least as high as those required

in vitro to inhibit *Brucella abortus* completely for 72 hours. Inoculations of milk into guinea pigs, and agglutination tests of serum and whey made weekly for at least two months after treatment, showed that the cows were still infected with *B. abortus*. The aureomycin failed to arrest the disease or to modify its usual course as observed in untreated cases.

BERTANI, L. (1949.) Sul comportamento sierologico di cavie inoculate con "Buck 19" o con colture di Brucella abortus bovis a virulenza normale. **[Serological behaviour of g. pigs inoculated with strain 19 and with *Brucella abortus* culture of normal virulence.]** —*Riv. Med. Vet. Zootec.* **1.** 395-410. [English & French summaries. Abst. from English summary.] **322**

B. used 34 g. pigs, 17 being injected subcutaneously with a highly virulent bovine strain of *Br. abortus* and the other 17 with strain 19 of the same organism. In the first group the agglutination titre rose gradually till the death of the animal; in the latter group it reached its maximum towards the 15th day, then decreased and towards the 110th day was no longer noticeable.

ANON. (1950.) **Chemotherapy of experimental *Brucella abortus* infection in the guinea pig.** —*Bol. Ofic. sanit. panamericana.* **29.** 400-411. [English and Spanish summaries. Part of English summary copied *verbatim*.] **323**

The results of a pilot experiment on the chemotherapy of *Br. abortus* infection in the guinea pig have been presented. There were no marked differences between one aerobic *Br. abortus* strain (Strain Sablin) and one anaerobic strain (No. 1489) in their infectivity for the different organs and tissues of normal guinea pigs. The splenic pulp and lymph nodes were the only tissues from which Brucella were consistently isolated. Therefore only spleen and lymph nodes were cultured for the evaluation of treatment.

The treatment with chloromycetin was completely ineffective when administered orally to guinea pigs. There is the possibility of deficient absorption. Blood levels of the drug were not determined. Streptomycin dimazol (NU–445) and sulfadiazine when given alone caused only a slight decrease in the number of organisms in the spleen and lymph nodes. However, a combined treatment of streptomycin and sulfadiazine was effective in eliminating the brucellae from the spleen but not from the lymph nodes. This emphasizes the need of culturing both the lymph nodes and the spleen for the evaluation of treatment. The combined treatment with aureomycin plus streptomycin resulted in a marked decrease or complete elimination of brucellae from the spleen and/or the lymph nodes.

SHANKS, P. L. (1950.) **Sulphamezathine in the treatment of enterotoxaemia in goats.** [Correspondence.]—*Vet. Rec.* **62.** 101. **324**

Sulphamethazine is almost specific for enterotoxaemia in goats and at a dose rate of 1 g. per 10 lb. gave spontaneous recoveries in all acute cases. A full dose is given immediately on diagnosis and a quarter of the dose given at 4-hourly intervals on the next day and this is maintained until scouring ceases (usually within 48 hours). Chronic cases should be treated similarly.—MALCOLM WOODBINE.

MOINE, G. G. (1950.) Du danger des cadavres en putréfaction au sein des denrées alimentaires. **[Botulism in horses eating fodder contaminated by putrid carcasses of small animals.]**—*Rev. Path. comp.* **50.** 411-413. [English summary.] **325**

Two horses developed botulism after feeding on straw in which was found a nest containing the putrefied bodies of some chickens and eggs, the straw having been stored for some months in an airless shed. M. lays emphasis on the importance of searching all foodstuffs and water supplies for bodies of small animals. There have been many similar cases recently in N. France, mostly amongst horses.

—R. MACGREGOR.

GUNNING, O. V. (1950.) **Losses in geese, ducks and poultry, caused by a toxin in the gut contents which resembled the toxin produced by the anaerobe *C. botulinum*.**—*Brit. vet. J.* **106.** 81-82. **326**

A brief note suggesting that kitchen waste infected with anaerobic organisms might have been the cause of the losses reported.

—MALCOLM WOODBINE.

LEVI, M. L. (1950.) **The agglutination test in vibrionic abortion of sheep.**—*J. comp. Path.* **60.** 65-70. [Author's summary copied *verbatim*.] **327**

Formalinised suspensions made from five strains of *V. foetus* isolated from separate outbreaks of abortion were agglutinated by sera from normal sheep to different titres varying from 1 in 40 to 1 in 160; the titres obtained varied according to the strain used in the preparation of the bacterial suspension.

Sera from infected ewes were tested against

their homologous strains and 46 of 57 examined agglutinated the suspensions to higher titres than normal sera. In a large number of cases (24 out of 49 tests) the sera of the infected ewes failed to react significantly when tested against suspensions prepared against strains other than the one with which they were infected. Agglutination tests with rabbit antisera suggested that the divergent results obtained with sheep sera are due to differences in the antigenic structure of strains of *V. foetus*.

The results obtained indicate that at present the agglutination test cannot be recommended as a routine method of diagnosis in vibrionic abortion of sheep.

THOROLD, P. W. (1950.) **The transmission of lumpy wool (*Actinomyces dermatonomus*) by benzene hexachloride dips.**—*J. S. Afr. vet. med. Ass.* **21.** 30-32. 328

In vitro and *in vivo* tests indicated that benzene hexachloride (B.H.C.) does not favour transmission of *Actinomyces dermatonomus* infection. Concentrations of 0·2% B.H.C. actually inhibit the growth of fungus.

—G. B. S. HEATH.

CAMPBELL, A. M. G., MACRAE, J., MANDERSON, W. G., SUMNER, K. C. & BROOM, J. C. (1950.) **Canicola fever in Bristol. Clinical, bacteriological, and epidemiological notes on six human cases.**—*Brit. med. J.* Feb. 11th. pp. 336-340. 329

Leptospira canicola infection in dogs may exist in various stages from the grave infection to the carrier state. The percentage of infected dogs is apparently quite high: up to 40% in towns and there is little evidence to suggest that it is less common in country districts. In the carrier state *Leptospira* may be shed in large numbers in the urine for several months, the animals constituting a grave menace to other dogs.

Two patients had frequently mopped up pools of urine made by puppies which were apparently healthy but were in fact carriers. One had a cut finger and the other constantly suffered minor hand injuries at work; these injuries probably formed the portal of entry. Another case resulted after bathing in stagnant water presumably contaminated with infected dog urine.—JAMES H. HALE.

EDWARD, D. G. ff. (1950.) **An investigation of the biological properties of organisms of the pleuropneumonia group, with suggestions regarding the identification of strains.**—*J. gen. Microbiol.* **4.** 311-329. [Author's summary copied *verbatim*.] 330

Seventeen representative strains of pleuropneumonia-like organisms were investigated to determine whether they could be identified by cultural methods. The Ll organism was readily identified by its morphology and by its cultural appearances on solid and in fluid and semi-solid media. Differences, depending on whether growth occurred anaerobically, whether growth was smooth or granular and whether a precipitate was formed in horse serum media, served to distinguish most of the other strains. The requirements of serum and yeast extract for promoting growth and the effect of pH were studied with each strain. Several strains fermented carbohydrates. Young cultures of some strains reduced methylene blue. Haemolysis around colonies in horse blood agar was noted with some strains; young broth cultures of these strains discoloured suspensions of horse erythrocytes. The factor discolouring erythrocytes was found in filtrates of old cultures of *Asterococcus bovis*. Two strains were pathogenic for mice; when recovered after passage they showed no alteration in their nutritional requirements. The organisms were resistant to penicillin; one strain grew in a medium containing 3,000 units/ml.

STANTON, M. F., LASKOWSKI, L. & PINKERTON, H. (1950.) **Chemoprophylactic effectiveness of aureomycin and terramycin in murine bartonellosis.**—*Proc. Soc. Exp. Biol., N.Y.* **74.** 705-707. [Authors' conclusions copied *verbatim*.] 331

Both aureomycin and terramycin, started 48 to 72 hours before the expected onset of illness and continued for nine days were found to be effective in preventing murine bartonellosis. Rats treated with these compounds developed no evidence of illness while the morbidity in the control groups was 100%, and the mortality 50 to 100%. A few bartonellae appeared in the blood of some of the treated rats, but anemia and hemoglobinuria were prevented. The chemoprophylactic effectiveness of these two compounds in murine bartonellosis is in contrast to negative results obtained with a wide variety of other antibiotics.

SPLITTER, E. J. (1950.) **Neoarsphenamine in acute eperythrozoonosis of swine.**—*J. Amer. vet. med. Ass.* **117.** 371-373. [Author's summary copied *verbatim*.] 332

Specific therapy of acute, experimental infections of *Eperythrozoon suis* was obtained with neoarsphenamine. Single, intravenous doses varying from 15 to 45 mg. per kilogram (0·68 to 2·0 Gm./100 lb. of body weight) were

effective. Treatment must be administered early in the disease if the prevention of acute anemia is to be expected. The body temperature may be used as an indicator of the probable outcome of specific therapy in known infected animals. Sodium cacodylate was ineffective against *E. suis* at an intravenous dose of 0·3 gr. per pound of body weight.

RHODES, M. (1950.) **Viability of dried bacterial cultures.**—*J. gen. Microbiol.* **4.** 450-455. [Author's summary copied *verbatim.*] 333

Cultures were dried in a vacuum over phosphorus pentoxide. At varying intervals up to 14 years tests were made on 2,724 strains (representing over 40 genera) and 83% of cultures were found to be viable. *Staphylococcus*, *Sarcina* and *Micrococcus* were the genera most resistant to drying; *Vibrio* and *Neisseria* were among the least resistant.

LAURELL, G., LÖFSTRÖM, G., MAGNUSSON, J. H. & OUCHTERLONY, O. (1949.) **Airborne infections. II. A report on the methods.**—*Acta med. scand.* **134.** 189-204. [In English.] 334

A discussion of the methods used in Sweden for investigating airborne infections: experiments under laboratory conditions, and field investigations in hospitals, day-nurseries, etc. Among the measures that may give results of practical value are mentioned: continuous control by selective media of the airborne bacteria, especially haemolytic streptococci and *Staphylococcus aureus*, in children's and isolation hospitals and in ear- nose- and throat wards; and isolation and treatment of carriers. The presence of even small quantities of pathogenic bacteria and of too large quantities of non-pathogenic bacteria in the air may be significant for a dangerous pollution of the air, and the use of ultra-violent rays, oil impregnation of textiles, and more adequate ventilation should be investigated.—W. R. BETT.

SHAPIRO, H. (1950.) **An analysis of the mechanism of the bacterial filtering action of gauze masks.**—*Amer. J. Hyg.* **51.** 135-141. [Author's summary copied *verbatim.*] 335

Measurements were made of the distribution of thread sizes and spaces of the masks actually used in experiments to test their efficacy in protecting rabbits inhaling airborne tubercle bacilli from developing lung tubercles.

Approximately normal distribution curves of sizes were found. The curves for the spaces and threads could be roughly superimposed, and show a statistical space-thread ratio of 1·67 to 1·00. Three layers would result in the complete coverage of a large fraction of the space area, and the probability of eliminating free unobstructed spaces in the combined layers approaches the value of 1·0.

If it be assumed that the nature of the bacterial surface, the velocity of air flow and the associated relevant variables are such that the cells adhere to the threads on coming into contact with them (occlusion by impact), the geometry of the superimposed gauze layers would provide a barrier preventing a direct free path for a bacterial cell carried in the air stream. Cell contact with a fiber would be expected in well over 90% of the bacteria inhaled through the masks, in the particular instance under consideration.

COWAN, S. T. (1950.) **The National Collection of Type Cultures.**—*Lancet.* **258.** 82-83. 336

An outline of the history of the National Collection of Type Cultures and, in particular, of its recent reorganization. Fungi, yeasts and such bacteria as are of importance solely for agriculture or industry have been transferred to other collections. The organisms remaining in the N.C.T.C. are of interest only to medical or veterinary workers. All cultures are now kept in a dried state, and in future will be issued dry.
—A. MAYR-HARTING.

See also abstr. **397** (BCG); **404** and **405** (intestinal bacteria); **408** (syphilis); **413** (gliotoxin and tubercle bacilli); **414** (tetanus antiserum; **415** (tetanus anatoxin); **420** (bacterial endotoxins); **523** (*Bact. coli*); **524** (*B. anthracis*); **551** (staphylocoagulase); **569** (*Cl. haemolyticum*); **573** (TB. and meat inspection); **598** (tubercle bacilli resistant to P.A.S. and streptomycin); **622** (report, Leeward Islands); **623** (report, Eire); **624** (book, microbiology and immunity).

DISEASES CAUSED BY PROTOZOAN PARASITES

GAN, K. H. (1949.) **Amoebae in rats.**—*Doc. Neerl. Ind. Morb. Trop.* **1.** 371-376. 337

Fifteen (30%) of 50 laboratory rats in Batavia were found to be infected with active amoebae, and 29 (58%) with slow-moving amoebae. Cysts and vegetative amoebae were found in four (8%). Five (16%) of 31 *Rattus rattus diardi* were infected with active and 11 (35%) with slow-moving amoebae. Infection experiments showed that the active rat amoebae were not pathogenic for cats, in contradistinction to *Entamoeba histolytica of* human origin.—W. R. BETT.

BUCK, M. (1948.) **Persistence of the parabasal body in a p-rosaniline resistant strain of**

Trypanosoma brucei.—*Proc. Soc. exp. Biol., N.Y.* 67. 77-79. 338

B. describes the history and properties of an atypical *p*-rosaniline-fast strain of *T. brucei* characterized by the persistence of the parabasal body after the parasites had reached maximal resistance to the dyestuff. Furthermore, the strain was sensitive to 6, 6′-ureylene bis [4-amino-2-methylquinoline] although this compound had no effect on *p*-rosaniline-resistant strains of *T. equiperdum* which characteristically lacked the parabasal body. It was not known whether there was any relationship between the presence or absence of a parabasal body, and sensitivity towards 6, 6′-ureylene bis [4-amino-2-methylquinoline] in *p*-rosaniline-fast strains of trypanosomes.

—Fergus S. McCullough.

Thienpont, D. (1950.) **Antrycide treatment of trypanosomiasis infections in native cattle of Ruanda - Urundi. Field trials.**—*Bur. interafr. Tsetse Tryp., Leopoldville.* Publ. No. 104/T. pp. 6. [Author's summary slightly modified.] 339

Antrycide was used in a region of Ruanda-Urundi for the treatment of 32 cattle with trypanosomiasis; 28 animals were followed up for six months. As a whole the results were very satisfactory. Antrycide appears to have more trypanocidal effect on *T. congolense* than on *T. vivax*. A *T. vivax* infected animal was found reinfected with *T. congolense* 144 days after treatment. Two *T. vivax* relapses were recorded 52 days after treatment, and another *T. vivax* relapse 144 days after treatment.

Antrycide determines a very painful marked local reaction, without formation of abcesses or repercussions on the general condition. In some cases antrycide may provoke symptoms of photosensitivity. Resulting dermatitis is easily curable by local treatment with a 10% solution of mercurochrome and insulin injections. The four deaths which occurred among the animals used in the experiment cannot be attributed to antrycide.

Cabrera, D. J. (1949.) **Observations on the mode of action of naganol (Bayer 205) as a trypanocidal agent.**—*Philipp. J. Sci.* 78. 135-144. [Author's summary and conclusions slightly modified.] 340

The effect of naganol against *Trypanosoma evansi in vitro* and *in vivo* was studied. Virulent trypanosomes exposed *in vitro* for three hours to a naganol (germanin) concentration of 0·1 mg. per c.c. were rendered noninfective to white rats. Blood, swarming with trypanosomes obtained from two horses naturally infected with surra two, three and 27 hours after the intravenous administration of naganol, failed to infect white rats.

Blood obtained from a naturally infected horse, which had relapsed from a previous treatment (presumably with naganol), two and three hours after the intravenous injection of naganol, was infective to white rats which died after unusually long prepatent and patent periods. It is believed that the infection in this horse was caused by a strain which was naganol-resistant due to previous unsuccessful treatment with subcurative doses of the drug, or as a result of repeated exposures of one or more generations of the strain to ineffective levels of the drug in the blood of one or more hosts of the same or different species. The potential danger of producing naganol-resistant surra organisms through the indiscriminate use of the drug in the field is pointed out.

In all of the naganol-treated horses, the trypanosomes were found actively motile up to 27 hours after the administration of the drug. The organisms, however, were found to have markedly decreased in number at about the 20th to the 26th hour. The apparent lack of positive correlation between dose size of the drug and the rate of disappearance of the parasite in the peripheral circulation lends support to the hypothesis that naganol is indirectly trypanocidal.

Launoy, L. (1949.) Nouveaux documents sur la prophylaxie chimique, obtenue par voie orale, chez le rat, contre l'infection à *Trypanosoma gambiense* (souche Yaoundé). **[Oral chemoprophylaxis against *Trypanosoma gambiense* infection in rats.]**—*Bull. Soc. Path. exot.* 42. 240-243. 341

Twelve rats were given lomidine penicillinate, a salt derived from diamidino-diphenoxy pentane, in doses ranging from 0·035 to 0·075%. Nine were resistant to inoculation 9–14 days after administration of the drug. The three non-resistant rats were inoculated 27–33 days after administration. The 19 control rats died in average 46 days. Two of the treated animals stood up to four successive inoculations and one survived two inoculations.

—Jas. G. O'Sullivan.

Florent, A. (1949.) Le phénomène d'agglutination des trichomonas par le mucus vaginal —ou de "muco-agglutination" dans la trichomoniase du bétail. **[Agglutination of *Trichomonas foetus* by vaginal mucus.]**—*Ann. Méd. vét.* 93. 19-29. 342

The mucus agglutination test in cows should

be used in conjunction with direct examination for the trichomonads. Advice is given to practitioners regarding the collection of the most suitable material for diagnosis.

There is no evidence that a state of immunity develops in the bull.—JAS. G. O'SULLIVAN.

PIERCE, A. E. & MORGAN, B. B. (1950.) **Chemotherapy of *Trichomonas foetus* in the chicken embryo. I. Cultivation techniques. II. Drug screening experiments.**—*J. infect. Dis.* **87.** 93-95; & 96-98. [Authors' summaries slightly modified.] 343

I. An infection with *Trichomonas foetus* (strain BR) was produced by the injection of one million organisms into the allantoic, amnionic and yolk chambers of 10-day incubated chick embryos, but not by the intravenous route of inoculation. Of 60 eggs inoculated into the allantoic, amnionic and yolk-chambers only four were negative at the time of examination, two on the 6th day, one on the 13th day and one which hatched. It appeared that the trichomonads per se had little influence on the development of the embryo and that the infection could persist until the time of hatching.

Inoculation via the allantoic chamber is a simple procedure, and it produced only negligible mortality of the chick embryos. An inoculum of one million of strain BR *T. foetus* produced a high percentage of persistent infections of the allantoic fluid.

II. An in vivo technique utilizing the developing chick embryo was described for determining possible trichomonacidal properties of various compounds against *Trichomonas foetus*. A total of 102 compounds was tested by this method, of which the following three showed some activity: *p*-[Bis-(carboxymethylmercapto) arsino] acetanilide, *p*-[Bis-(carboxymethylmercapto) arsino] benzamide and 4-carbamido-phenyl-di-(1'-sulfinic acid-4'-thiophenyl) arsenite.

SCHNITZER, R. J., KELLY, D. R. & LEIWANT, B. (1950.) **Experimental studies on trichomoniasis. I. The pathogenicity of trichomonad species for mice.**—*J. Parasit.* **36.** 343-349. [Part of authors' summary copied *verbatim*.] 344

Evidence is submitted that one strain each of *T. vaginalis*, *T. gallinae*, and *T. foetus* was pathogenic for mice and produced characteristic lesions following the injection of bacteria-free cultures by the intra-abdominal intramuscular and subcutaneous route. The duration of the experimental disease was dependent on the infective dose and lasted after higher doses for more than 8–12 weeks. Fatal infections occurred only after intra-abdominal injection of cultures of *T. foetus*.

CHOQUETTE, L. P. E. (1950.) **Canine giardiasis and its treatment with atebrin.**—*Canad. J. comp. Med.* **14.** 230-235. 345

The pathogenicity of the parasite and the symptoms and treatment of the condition are discussed. Some of the cases were complicated by distemper. Dysentery and diarrhoea in young dogs may be due to a variety of causes, but *Giardia canis* should be kept in mind as a factor. Favourable results were obtained in several cases by the use of atebrin.

—R. GWATKIN.

SWALES, W. E. (1950.) **Enterohepatitis (blackhead) in turkeys. VII. Experiments on transmission of the disease.**—*Canad. J. comp. Med.* **14.** 298-303. [French summary. English summary copied *verbatim*.] 346

A series of experiments has again shown that enterohepatitis is readily initiated by embryonated eggs of *H. gallinae*, but in the absence of such eggs the disease was not transmitted from fowl to susceptible turkey poults by close contact, nor was it initiated by the ingestion of faeces from clinically affected poults. It is suggested that attention be redirected to the possibility of eliminating *H. gallinae* from poultry farms as a basic measure of prevention.

TEMPERTON, H., DUDLEY, F. J. & PARKER, W. H. (1948.) **The control of blackhead (infectious enterohepatitis) in turkeys. Part 2. The use of neoarsphenamine as a prophylactic.**—*Harper Adams Util. Poult. J.* **33.** 32-35. [For Part I, see *V.B.* **18.** 70.] 347

In a trial involving 336 turkeys, neoarsphenamine administered either orally or intramuscularly failed to prevent blackhead.

—JAS. G. O'SULLIVAN.

SEEGER, K. C., LUCAS, W. C. & TOMHAVE, A. E. (1950.) **The use of Enheptin-T in the control of enterohepatitis in turkeys.** —*Poult. Sci.* **29.** 610-611. [Authors' summary copied *verbatim*.] 348

No losses from blackhead occurred in the group of turkeys fed Enheptin-T at 0·05% in the mash. A loss of five turkeys or 2·35% occurred from blackhead in the group receiving the 0·025% level. Ten birds or 5·21% died of blackhead in the group receiving no drug.

Less feed was required to produce a pound of turkey in the presence of the Enheptin-T than occurred in the non-treated turkeys. The groups receiving 0·05% and 0·025% Enheptin-T

required 4·19 and 4·09 pounds of feed respectively for each pound of turkey compared to a ratio of 4·33 pounds of feed required per pound of turkey in the group receiving no drug.

The average weight of the turkeys appeared to be suppressed in direct proportion to the percentage of the Enheptin-T fed. The group on 0·05% averaged 0·79 of a pound less and the group fed 0·025% averaged ·69 of a pound less than the average weight of 16·77 lbs. per bird in the groups receiving no drug.

MEGALE, F. (1949.) Sôbre o tratamento da eimeriose dos bezerros pela iodo-cloro-oxiquino-leina (entero-vioformio). [**Treatment of coccidiosis in calves with iodochloroxyquinoline.**]—*Arq. Esc. Sup. Vet., Minas Gerais.* **2.** 29.32. [English summary.] [Abst. from author's summary.] 349

In this paper M. describes several cases of coccidiosis in calves and the results obtained by the use of iodochloroxyquinoline (vioform) stated to be efficacious in 100% of the cases.

KENDALL, S. B. (1950.) **A comparison of the efficacy of sulphamezathine (sulphadimethylpyrimidine) and sulphaquinoxaline in the control of experimentally induced caecal coccidiosis in chicks.**—*Vet. Rec.* **62.** 381-382. [Author's summary copied *verbatim.*] 350

Sulphaquinoxaline at a calculated concentration of 0·05% in the drinking water proved markedly more effective than sulphamezathine [sulphamethazine—Ed. *V.B.*] in limiting mortality from experimentally induced caecal coccidiosis in young chicks.

THURSTON, J. P. (1950.) **Action of proguanil on *P. berghei*. Inhibition by *p*-aminobenzoic acid.**—*Lancet.* **259.** 438. [Author's summary copied *verbatim.*] 351

The action of proguanil [paludrine] against *P. berghei* [*Plasmodium berghei*] was found to inhibited by *p*-aminobenzoic acid but not by pteroylglutamic acid. Against *P. gallinaceum* its action had previously been shown to be inhibited by pteroylglutamic acid but not by *p*-aminobenzoic acid. The action of sulphonamides on malaria parasites is known to be inhibited by both substances.

LEWERT, R. M. (1950.) **Alterations in the cycle of *Plasmodium gallinaceum* following passage through tissue culture. I. Tissue culture studies. II. The behavior of the strains during multiple passage through chicks.**—*Amer. J. Hyg.* **51.** 155-177; & 178-193. [Absts. from Author's summaries.] 352

I. Tissues removed from birds having exoerythrocytic stages of *Plasmodium gallinaceum* were maintained in continuous roller-tube cultures for periods of time up to four months. Cultures derived from pia mater proved to be infective for chicks up to 105 days after the cultures were originally prepared. During this period of time the tissue had undergone five subcultures.

Cultures derived from heart fibroblasts were also infective for chicks.

The survival of the parasites in culture was favored by the use of a strictly homologous nutrient (all media derived from chicks). The use of a heterologous medium (chick, beef and human sources), although maintaining the tissue very well, apparently was detrimental to the parasite. The use of the heterologous nutrient caused the cultures to become noninfective after one month of growth.

In vitro observations on the living parasite were possible in only a few scattered instances. Examination of permanent stained slides prepared at various times from the cultures also revealed parasites only occasionally.

All the birds infected from the tissue cultures died as a result of an exoerythrocytic infection. This was unique since none of the normally pigmented erythrocytic stages were present and in many instances no erythrocytic stages of any kind developed. In some of the birds a few minute nonpigmented erythrocytic forms were found at the death of the birds.

II. A postulate is advanced to explain the development of the exoerythrocytic strain after passage through tissue culture. It is thought that the development of this strain has been in the nature of a separation of one stage of the parasite from another. The exoerythrocytic stages survive in culture and produce merozoites which preferentially infect cells other than erythrocytes and cause the death of young chicks before numbers of erythrocytic forms develop. In the original strain, passed by blood inoculations, the merozoites developing in erythrocytes preferentially infect other erythrocytes and cause the death of young chicks prior to the development of perceptible numbers of exoerythrocytic forms.

GRIMPRET, J. (1948.) La lomidine dans le traitement de la theileriose bovine. [**Lomidine in the treatment of *Theileria* infection in cattle.**]—*Rev. Élev. Méd. vét. Pays trop.* **2.** 211-216. 353

Using lomidine, a derivative of guanidine,

in conjunction with gonacrine, G. reports very good results in the treatment of *Theileria* infection in cattle.—D. LUKE.

NEITZ, W. O. (1950.) **The specific action of pamaquin on the haemotropic parasites of *Theileria parva*.** [Correspondence.]—*S. Afr. J. Sci.* **46.** 218-219. 354

A dose of 0·05 g. per 100 kg. pamaquin (plasmoquin) on alternate days during the incubation period and daily during the reaction did not influence the clinical course of East Coast fever nor did it affect the development of Koch's bodies. The small piroplasms of the blood, however, were relatively rare and showed a variable degree of degeneration, being contracted or devoid of cytoplasm so that the nuclear rests resembled *Anaplasma*. *R. appendiculatus* larvae failed to become infected when fed on one of the treated animals.

—J. R. HUDSON.

NEITZ, W. O. & THOMAS, A. D. (1948.) ***Cytauxzoon sylvicaprae* gen. nov., spec. nov., a protozoon responsible for a hitherto undescribed disease in the duiker [*Sylvicapra grimmia* (Linné)].**—*Onderstepoort J. vet. Sci.* **23.** 63-76. 355

Stages believed to represent the schizogonous cycle and merozite liberation of a previously unrecorded protozoan parasite *Cytauxzoon sylvicaprae* from the duiker [a species of African antelope] are described. The parasite is tentatively placed in the family Theileridae. The symptomatology and the pathological changes of the disease are detailed; clinically the disease somewhat resembles heartwater. An attempt to transmit the disease to sheep failed. The source of infection and the mode of transmission are unknown. In conclusion, the authors stress the importance of more intensive study of the diseases of wild animals in order that valuable information may be gained on similar diseases of farm animals and of man.

—FERGUS S. MCCULLOUGH.

GROCOTT, R. G. (1950.) **A case of canine toxoplasmosis from the Canal Zone.**—*Amer. J. trop. Med.* **30.** 669-675. [Authors' summary copied *verbatim*.] 356

A case of naturally occurring toxoplasmosis in the dog is reported. It is the first instance of canine toxoplasmosis reported from the Canal Zone. Similarity of pathologic changes in human and animal toxoplasmosis is stressed. Calcific change due to parasitization of heart muscle is described. The possibility of various methods of transmission of the disease from the dog to man is discussed.

See also absts. **449** (coccidiosis); **525** (trypanocidal activity of parasorbic acid); **603** (staining of protozoa); **604** (cultivation of *Trichomonas vaginalis*).

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

ANON. (1948.) **Status of the Mexican foot-and-mouth disease campaign.**—*J. Amer. vet. med. Ass.* **113.** 34-35. 357

This is a summary of an official report dated May 10th, 1948.

When trails had been opened up by heavy road clearing equipment it was possible to declare 7,000 sq. miles in the northern quarantine area free from disease and the quarantine line was moved accordingly. This made the line 250 miles from the U.S. border. In the buffer zone 10–50 miles behind it, extensive use of vaccine prepared in Europe and the Argentine had been made. In the southern buffer zone extensive slaughtering had continued.

Non-cooperation of the stock owners added to the ever present difficulties associated with the poor state of communications. Cases of smuggling of cattle across the border into the United States were still occurring. Canning plants set up in Northern Mexico gave an outlet for the surplus stock refused legal entry into the U.S.A.—H. H. SKINNER.

KELSER, R. A. (1950.) **Foot and mouth disease with special reference to important facts and problems emphasized by the current outbreak in Mexico.**—*Vet. Ext. Quart. Univ. Pa.* No. 119. pp. 81-96. 358

During the past 50 years F. & M. disease has appeared in the U.S.A. on six different occasions—1902, 1908, 1914-15, 1924-25, 1929 and 1946. The earlier outbreaks are briefly described.

An estimate of an annual loss of 200 million dollars if the disease became established in the U.S.A. emphasizes the importance of taking every possible measure to prevent this occurring.

When the presence of F. & M. disease in Mexico was confirmed in 1946 a serious threat to the U.S.A. was recognised. The U.S./Mexican border was immediately closed to cattle traffic and a joint U.S./Mexican commission launched a campaign of slaughter. The extent of the disease was, however, by this time too great for this method to be effective and resort was made to vaccination as the main

method of attack. In the first instance Schmidt-Waldmann vaccine was procured from European laboratories, but later this vaccine was prepared in Mexico. Over 35 million doses were produced in the first 17 months. Duration of immunity was found to be short and the vaccinating doses were repeated every four months. The problems connected with the preparation and standardization of the vaccine, and with the enforcement of the measures adopted in this unique campaign are discussed.

Up to Nov., 1949, the total expenditure had been 92 million dollars. It had been planned to construct in the U.S.A. a F. & M. disease research institute for it was realised that the risk of infection being introduced had by no means diminished in recent years.

Tribute is made to the assistance received throughout from the British and European F. & M. disease specialists.—H. H. SKINNER.

ANON. (1950.) **Type "O" foot-and-mouth virus identified in Mexican outbreak.**—*Fed. Vet.* **7.** No. 1. p. 1. 359

F. & M. disease in Mexico since 1946 has been virus type "A", and the vaccine in use is against type "A" only. The outbreak reported in Oct., 1949, was caused by virus type "O", the Mexican identification having been confirmed at the Foot and Mouth Research Institute, Pirbright, England. Attempts are being made to eliminate the infection and to discover its source.—K. G. TOWERS.

FEDERER, K. E. (1950.) Investigaciones sobre el antigeno fijador del complemento del virus aftoso. [**Frozen antigen for use in the complement fixation test for foot and mouth disease.**]—*Gac. vet., B. Aires.* **12.** 105-117. [English and German summaries. English summary slighty modified.] 360

Reduction of the anticomplementary power and relative increase in the titer of antigens is accomplished by freezing at −20° C during 16–20 hours. Freezing at −20° C is an excellent means of preserving already prepared antigens. Bovine tongue epithelium stored in phosphate buffer at pH 7·6 and 2–4°C. maintains for years its complement fixing properties. Maceration of epithelium in pH 7·6 phosphate buffer at room temperature increases its anticomplementary action. Putrefaction quickly destroys the complement fixing antigen point. Infected heart muscle can give a good antigen for the complement fixation test.

WILLEMS, R. (1949.) Informations relatives à la préparation du vaccin anti-aphteux en Belgique. [**Preparation of foot and mouth disease vaccine in Belgium.**]—*Bull. Off. internat. Epiz.* **31.** 445-451. [English, Italian, Spanish and German summaries.] 361

Details are given step by step of the method employed for the preparation of aluminium hydroxide for use in Schmdit - Waldmann vaccine. Although this is such an important constituent of the vaccine, evidence is brought forward to show that preparations probably vary considerably from laboratory to laboratory. The Belgian preparation has a high adsorptive power as judged by the Congo red test. Vaccine prepared with this adsorbate has been used with complete success at the low dose of 20 ml. for cattle. A good immunity is present in nine days and is believed to persist for at least a year.—H. H. SKINNER.

MOOSBRUGGER, G. A. (1949.) Le développement de la technique de production du vaccin anti-aphteux en Suisse. [**Technique of foot and mouth disease vaccine production in Switzerland.**]—*Bull. Off. internat. Epiz.* **31.** 452-469. [English, Italian, Spanish and German summaries.] 362

This is an abridged account of the methods evolved at Basle for the large-scale preparation of Schmidt-Waldmann vaccine. Emphasis is placed on improvements in the technique and a diagram and photographs of the production plant are given.

It is recognised that strains of virus vary in their suitability for the production of vaccine and this point has not been overlooked in the selection of the Vallée 'O' and 'A' strains which are used. By taking all due precautions it has been found possible to work simultaneously with these two strains when necessary without getting them mixed. The best donors of antigen are cattle imported from Ireland which give a yield of 80–90 g. of material. Much attention has been paid to the extraction of the largest possible amount of antigen from the infective tissues and all manipulations for this are carried out at 0–5°C.

Great skill has been shown in the construction of 300 l. containers for attenuation of the adsorbed antigen at a strict temperature of 25·0–25·5°C. with no risk of local overheating. The vaccine is bottled direct from these containers after homogenization.

The demand for vaccine is unpredictable and as the likely bottle neck in any large-scale step up of production would probably be in the supply of cattle as donors of virus, the difficul-

ties associated with the storage of vaccine for long periods have been partly overcome by creating a stock of virulent antigen stored at −40° C.—H. H. SKINNER.

STEELE, J. H. (1950.) Control internacional de rabia. [**International control of rabies.**] —*Bol. Ofic. sanit. panamericana.* **29.** 599-605. [Abst. from English summary.] **363**

The author discusses the merits of the six points recommended by the U.S.-Mexican Border Rabies Conference. The first five points, education, diagnosis, reporting, vaccination and animal control, are not considered to be adequate as individual modes of attack, but when integrated they become efficient. He expresses the opinion that an effective international campaign can be launched through the united efforts of the U.S. Government, the Mexican Government, and the Pan American Sanitary Bureau.

FUST, B. & GRÜNIG, P. (1949.) Über die Ausschaltung der Begleitbakterien in der Kuhpockenlymphe unter besonderer Berücksichtigung der kombinierten Anwendung von Penicillin and Cibazol. [**Purification of cow pox vaccine with penicillin and sulphathiazole.**]—*Arch. ges. Virusforsch.* **4.** 130-152. **364**

After describing the abortive action of seven other agents (including phenol) the activity of penicillin and sulphathiazole alone and together is discussed. At 2,000 units per ml. lymph, penicillin gives a reduction in the contaminating bacteria after 24 hours, but their numbers increase again over the subsequent eight days. Sulphathiazole at 0·04 mg. per ml. lymph gives a clear reduction in the bacteria within 24 hours and streptococci and haemolytic *Staphylococcus aureus* are destroyed without any injury to the virus. The combination of 2,000 units of penicillin and 0·04 mg. sulphathiazole per ml. lymph was superior and frees the lymph from human pathogenic cocci within 24 hours. The inoculation material keeps for at least three weeks at 0° C.

—MALCOLM WOODBINE.

MANNINGER, R. (1948.) Un nouveau vaccin contre la clavelée. [**A new vaccine for sheep pox.**]—*Bull. Off. internat. Epiz.* **29.** 237-238. **365**

The use of virulent sheep pox virus as a vaccine (ovination) tends to perpetuate the infection and in some countries it is forbidden by law.

M. adsorbed the virus on $Al(OH)_3$ as had been done by Danish workers with F. & M. disease virus, but although the product was capable of setting up an immunity it was still virulent.

The use of formalin on the adsorbed product produced a non-virulent vaccine capable of setting up an active immunity 6–8 days after vaccination and lasting at least nine months. During 1943-44, 3,000 sheep were vaccinated, some in infected flocks. In the latter flocks no new cases developed later than one week after vaccination and those which developed in the interval had slight symptoms only.—E. J. H. FORD.

NOBREGA, P. & REIS, A. S. (1949-50.) Preparação de vacina contra a bouba aviária com vírus de pombo purificado pela penicilina e cultivado na cavidade cório-alantóide de embrião de pinto. [**Preparation of fowl pox vaccine with pigeon virus purified by penicillin and cultivated in the chorioallantoic cavity of the chick embryo.**] —*Arq. Inst. biol., S. Paulo.* **19.** pp. 23-29. [Engish summary slightly amended.] **366**

A simple and rapid method of obtaining suspensions of pigeon pox virus free from contamination is described. The method consists in the addition of 5,000 Oxford units of penicillin G to the suspension of infected skin, which is usually contaminated with staphylococci. The contaminant staphylococci are shown to be highly resistant to penicillin by *in vitro* experiments. The inhibiting action of the drug only appears when six to eight Oxford units are used. The contaminated suspension may be injected into the embryonated egg one minute after the addition of penicillin, the inoculation being made directly into the chorio-allantoic cavity of 10–11 day old chick embryos.

This method gives results as satisfactory as those obtained with the classical technique of cultivating viruses on the chorio-allantoic membrane, and from a practical point of view it is simpler, quicker and easier to perform.

The authors compare vaccines prepared with the whole embryo and with pigeon skin and show that the first ones give higher yields.

FRANCIS, T., JR. & KURTZ, H. B. (1950.) **The relation of herpes virus to the cell nucleus.**—*Yale J. Biol. Med.* **22.** 579-587. [Authors' conclusions copied *verbatim.*] **367**

Although the inclusions produced by herpes virus are nuclear in location, no evidence was obtained to indicate that herpes virus is selectively bound to nuclei or to nuclear nucleoprotein. The results indicate that the inclusions are not herpes virus.

YOUNG, G. A., JR., UNDERDAHL, N. R. & CARPENTER, L. E. (1949.) **Vitamin D intake and susceptibility of mice to experimental swine influenza virus infection.**—*Proc. Soc. exp. Biol., N.Y.* **72.** 695-697. [Authors' summary copied *verbatim*.] 368

Experimental evidence is presented which indicates that mice fed diets containing little or no vitamin D for 28 days after weaning showed increased susceptibility to experimental swine influenza virus infection. Females were more susceptible than males.

BRIODY, B. A. (1950.) **Variation in influenza viruses.**—*Bact. Rev.* **14.** 65-95. 369

B. tabulates the differences between type A and type B strains of influenza; the intratypic properties of influenza virus which show variation; the effect of vaccination on the incidence of influenza type A infection; pathogenicity for man of influenza virus strains; stability of influenza virus haemagglutinins; the effect of ions on the haemagglutinin for fowl cells of type A virus in the O and XO phases; variation in serum inhibition of heated influenza virus; "non-specific" inhibition of influenza haemagglutination; differences between the O and D phases of type A influenza virus; and properties of the WS and MELB type A strains after full adaptation to the chorioallantois. Mutability and variation in influenza virus is so marked that prognosis of control measures must be guarded.—W. R. BETT.

BURNET, F. M. (1948.) **The initiation of cellular infection by influenza and related viruses.**—*Lancet.* **254.** 7-11. 370

A mucin present in the surface layer of the red blood corpuscles and of the cells attacked is the primary substrate of an enzyme responsible for the haemagglutination action of the mumps-influenza group of viruses. An enzyme obtained from *Vibrio cholerae*, which is active against this substrate, renders cells insusceptible to infection by viruses of this group. This work opens up a possible approach to the chemotherapy of virus disease.

—W. R. BETT.

VINSON, J. W. & WALSH, F. T. (1950.) **The effect of terramycin on the PR8 strain of influenza A virus in chick embryos and mice.**—*J. Immunol.* **65.** 129-134. [Authors' summary slightly modified.] 371

Terramycin, inoculated in high concentrations into either the yolk sac or the allantoic cavity, was found to inhibit the PR8 infection of the chick embryo when administered 1–3 hours before, or up to 1 hour after, the inoculation of 10 to 100 ID_{50} of the virus. Partial protection could be obtained against 500, but not against 1,000, ID_{50} of the virus or by delaying therapy for three, but not for 24, hours. When tested in concentrations comparable to those found *in ovo*, the antibiotic did not inactivate the virus *in vitro*. Concentrations of terramycin comparable to those found *in ovo* neither prevented the living virus from agglutinating red blood corpuscles (RBC) nor prevented the RBC from being agglutinated by the virus. Its presence in the hemagglutination system did not alter the titre of the virus. Oral, intravenous, or intranasal administration of terramycin did not influence the course of infection in mice induced by 25–50 LD_{50} of the PR8 strain.

JUNGEBLUT, C. W. & STEENBERG, E. (1950.) **Neurotropic and viscerotropic strains of Columbia SK and encephalomyocarditis virus.**—*Arch. Path.* **49.** 574-581. 372

Murine strains of both these viruses maintained by intracerebral inoculation of brain tissue were shown to acquire fresh properties after ten passages of spleen tissue by the intraperitoneal route in Swiss mice weighing 8–12 g. Localized myositis in the paralysed limbs and a focal myocarditis were observed regularly in mice paralysed by the 'visceral' strains after intraperitoneal inoculation. No comparable lesions were seen in paralysed mice when the 'neural' strains were inoculatd by the intraperitoneal route.

There was at the same time a marked reduction of the potency of the visceral strains as indicated by their titre by the intracerebral or intraperitoneal routes but there was no reduction in the period of incubation.

The property of producing a myositis in the paralysed limbs brings these viruses into a close biological relationship with the viruses of the Coxsackie group.—H. H. SKINNER.

BEAUDETTE, F. R. & BLACK, J. J. (1948.) **Equine encephalomyelitis in New Jersey pheasants in 1945 and 1946.**—*J. Amer. vet. med. Ass.* **112.** 140-147. 373

The paralytic symptoms which occur in encephalomyelitis of pheasants are considered as quite typical and highly diagnostic when encountered in late summer and autumn in New Jersey where the virus also causes disease in horses. Five more outbreaks on pheasant farms in New Jersey are described. This makes a total of 13 since 1938. Mortality varied from 17–77% on the three farms affected. Confirmation of the clinical diagnosis was based on the

early death and typical macroscopic findings in chick embryos inoculated with brain or spleen tissue from affected birds. There was no identification of the causal agent by filtration or neutralization tests. However, on one farm in 1946, pens inoculated with a commercial vaccine (Eastern type) resisted the disease.

Failure to obtain positive results in chick embryos inoculated with material from two other clinically typical outbreaks was taken to indicate that the equine encephalomyelitis virus was not the causal agent in these cases.

—H. H. SKINNER.

KRAL, F. (1949.) **Equine infectious anemia.** —*Vet. Ext. Quart. Univ. Pa.* **No. 116.** pp. 14-21. **374**

A short review of the properties and distribution of the causative virus in the affected animal, the natural history of the disease, symptomatology and pathology. K. showed that the virus was not ultrafiltrable but appeared to be associated closely with blood and tissue albumins. Virulence of the virus varies greatly at different stages of the disease. The blood of clinically cured, apparently healthy horses, was shown to contain virus for periods up to 12 years after an attack of the disease. K. records two instances of human infection with the virus, acquired in the laboratory from infected horses. The symptoms consisted of high intermittent pyrexia and anaemia.

—H. PLATT.

ZAVAGLI, V. (1948.) L'agalassia contagiosa delle pecore e delle capre. III.—Alterazioni nel pH del latte di pecora per l'azione del virus agalattico e loro valore diagnostico—contemporaneo comportamento del pH del sangue. **[Contagious agalactia in sheep and goats. III. Diagnostic value of changes in the pH of ewes' milk and blood caused by the action of the virus.]**—*Zooprofilassi.* **3.** No. 8. 1-10. [French summary.] **375**

Experiments were carried out in order to establish the relationship of pH of milk to contagious agalactia in sheep from the Rome district. Ewes, with milk of normal pH varying between 6·7–7, were injected subcutaneously with 10–20 ml. of normal mik and extracts or suspensions from healthy organs without alteration of the pH of their milk.

When milk and suspension of organs from sheep infected with agalactia were injected into healthy ewes, their milk became alkaline within 24–36 hours before lesions of the udder appeared. The average increase in pH was 0·8, the highest value being 1·2, reached between the second and the sixth day after initial alteration of pH. Soon after, it resumed normal level. Change in pH was not caused by varying content of carbon dioxide nor by presence of ammonia in the milk. In the blood similar changes were observed to take place simultaneously with pH variation of milk.

Z. concluded that a general change of chemical action takes place in animals infected with the virus of contagious agalactia and that early change in pH of suspect milk samples may be of diagnostic value.—E.G.

BABIK, J. (1950.) Nakažlivá obrna u diviakov. **[Teschen disease in wild boars.]** *Čas. československ. Vet.* **5.** 326-327. **376**

In the course of eight months 19 cases of infectious paralysis in wild boars came under B.'s observation in Czechoslovakia. One of the animals, found in October in an almost completely paralysed state, made a partial recovery while under his care, but died in April. This animal was thoroughly studied from the clinical point of view, and at P.M. examination the possibility of any traumatic injury to brain or spinal cord could be excluded. The herds of wild boars in the district have been greatly reduced owing to this disease which, for the last two years, has taken a particularly severe course also in domestic animals.

—A. MAYR-HARTING.

ULLRICH, K. (1950.) Gedanken zur Hundestaupe. **[Dog distemper.]**—*Dtsch. tierärztl. Wschr.* **57.** 291-292. **377**

A discussion of the present methods of treatment and of various pharmacological approaches to distemper.—R. HADEK.

GROULADE. (1949.) Hépato-néphrites dans la maladie de Carré. Essai de traitement. **[Hepatitis and nephritis in dog distemper.]** —*Rev. Path. comp.* **49.** 195-197. [English summary.] **378**

Fifty dogs with distemper were examined; 42 were affected with a hepato-nephritis, five with nephritis and three with hepatitis. A diagnostic feature in all cases was a painful area behind the last rib and under the second lumbar vertebra. Treatment comprised mineral water from Breuil (known as Hydroxydase) containing colloidal ferrous carbonate. It was administered either intravenously or *per os* in doses of 10–20 ml. at 24-hour intervals. There was improvement in all cases and in 50% a lowering of temperature in 48 hours.—G. V. LAUGIER.

BROADHURST, J., MACLEAN, M. E. & SAURINO, V. (1950.) **Nasal inclusion bodies in dog distemper.**—*Vet. Med.* **45.** 60-62. 379

A description of certain hitherto undescribed intracytoplasmic bodies in the epithelial cells of the nasal mucosa, which the authors consider are specifically associated with infection by the dog distemper virus. A method of demonstrating the inclusion bodies by negrosin staining of nasal swabs is described. The bodies are about 1μ in diameter (0·5–2μ) and lie close to the periphery of the cell. They stain black with negrosin against a greyish background of the host tissues.—H. PLATT.

VLADIMIROV, V. V. (1949.) **[Haemagglutination reaction in dog distemper.]**—*Veterinariya, Moscow.* **26.** No. 7. pp. 59. 380

Clinical and pathogenic similarities between human influenza and dog distemper suggested an inquiry into the possibility of diagnosing distemper by means of haemagglutination reaction. Six sources of the virus were used in seven concentrations each, erythrocytes from a human being, a horse, a ram, a hen, a cock and a frog being utilized. Sera of healthy horses and dogs were used as controls. Agglutination reaction 1:40 was demonstrated with human erythrocytes and 1:40 – 1:320 with frog erythrocytes. Controls of healthy canine serum were used, as a non-specific haemagglutination was caused by sera from some healthy dogs up to 1:10 – 1:25.

—F.A.A.

WAGNER, W. (1949.) Bestimmung des Calcium- und Phosphorsäuregehaltes im Blutserum staupekranker Hunde. **[Calcium and phosphorus content of the blood in canine distemper.]**—*Inaug. Diss., Hanover.* pp. 31. 381

In distemper with acute symptoms, calcium and phosphorus contents of blood serum did not differ significantly from normal values. In nervous distemper, when acute symptoms were not so marked but the duration of the illness was longer, the calcium content of the serum was, on the average, lower than the normal and this lowering appeared to run parallel with intensity of nervous symptoms; phosphorus was somewhat raised; Ca/P ratio was lower than normal.—R. MARSHALL.

WOODROW, C. E. (1949.) **An outbreak of hard pad disease in huskies.**—*Vet. Rec.* **61.** 821-825. 382

An account of an outbreak of hard pad disease among 31 Huskies imported from the Antarctic (Falkland Islands Dependencies). The dogs were immunized against distemper by the vaccine-virus method while on the voyage to Great Britain and on arrival three were challenged with live Laidlaw-Dunkin virus without effect. Some five weeks after arrival many of the dogs had pyrexia. Eight dogs which were without fever were given live L.D. virus, and a temperature rise occurred in five of them within 1–2 days of injection, suggesting that the injected virus was not responsible. One dog died on the fifth day after injection and examination of the pads and ferret inoculation confirmed a diagnosis of hard pad disease. Some of the dogs were given therapeutic doses of hard pad serum varying from 20–70 ml. Except in large doses, serum treatment appeared to be of little benefit. Thirteen dogs with pyrexia and other symptoms were treated with 10 ml. of spleen suspension containing live distemper virus. Ten of them recovered. It is believed that the injection of live distemper virus was of therapeutic value.—H. PLATT.

SCHOFIELD, F. W. (1949.) **Virus enteritis in mink.**—*N. Amer. Vet.* **30.** 651-654. 383

A highly fatal disease, experimentally transmitted to young mink by the inoculation of bowel filtrates. There are characteristic histological changes in the intestine. Treatment is stated to be futile, except for the injection of bacterins against secondary invaders.

—ROY MACK.

BLOOD, B. D. (1950.) **Epidemiology of Newcastle disease.**—*Bol. Ofic. sanit. panamericana.* **29.** 28-49. [Spanish summary.] 384

This general review deals with nomenclature, history and distribution, aetiology, pathogenesis, spread of virus, diagnosis, immunity, and biological considerations of the virus. The first known case of Newcastle virus infection in a human being was recorded in 1943.

—W. R. BETT.

d'ARCES, J. (1949.) La peste aviaire en Algérie. **[Fowl plague (Newcastle disease?) in Algeria.]**—*Bull. Off. internat. Epiz.* **32.** 83-88. 385

Fowl pest appeared in Algeria in January, 1946. It appears to have been brought in from Italy by turkeys imported from that country. Virus lethal to poultry was recovered from sparrows found dead in runs where poultry were dying.

Control was attempted by vaccination, but breakdowns occurred in vaccinated birds with mortality up to 90%. The suggestion is made

that modification of the original virus may have occurred. No details are given as to the methods employed in identifying the virus.
—D. LUKE.

BEAUDETTE, F. R. (1948.) **Report of the committee on diagnosis of Newcastle disease.** —*J. Amer. vet. med. Ass.* **112.** 128-130. 386

This report summarises the work on Newcastle disease carried out over a period of two and a half years under the direction of the above committee. Work on the isolation of the virus consisted of examining brain, spleen, exudates from the respiratory tract, ovary and yolks of eggs still in the oviduct. Of these tissues the spleen had the highest incidence of virus and the brain the lowest. The techniques employed in the collection of the material for examination are described.—D. LUKE.

BRANDLY, C. A. (1950.) **Newcastle disease.** —*J. Amer. vet. med. Ass.* **116.** 139-146. 387

In this general article B. briefly reviewed the literature under various headings viz: properties of the virus, pathogenicity and virulence, haemagglutination activity and variability of the virus.

The various factors involved in the spread of the disease and in its diagnosis and control are discussed.—D. LUKE.

DOLL, E. R., WALLACE, M. E. & MCCOLLUM, W. H. (1950.) **Interpretation of serologic procedures for the diagnosis of Newcastle** disease.—*Amer. J. vet. Res.* **11.** 265-271. 388

A total of 283 samples of serum from non-infected chickens was tested for normal haemagglutination-inhibition activity. Complete inhibition did not occur in any of the samples at 1 : 10 dilution. It is considered that complete inhibition of agglutination in chicks from susceptible hens probably indicates infection with Newcastle disease virus. Complete inhibition at 1 : 20 is regarded as positive evidence of infection when the chickens are from non-immune hens.

After artifical infection with a virus of low virulence positive titres appeared in 7·8% of chicks in six days. This percentage increased and by the 12th day all the experimental birds had positive titres.

Normal sera from chickens eight weeks old neutralized less than 10 embryo LD_{50} of Newcastle disease virus. It is considered that a serum neutralization titre of 100 or more is indicative of positive infection or previous exposure to Newcastle disease virus. Titres of less than 100 and more than 10 are regarded as doubtful.

A fairly close correlation was found between the haemagglutination-inhibition titres of serum and that of egg yolk over a period of several months after a natural outbreak of Newcastle disease. In experimentally infected birds there was an earlier rise in serum neutralizing antibodies than in haemagglutination-inhibition activity.—D. LUKE.

BURNET, F. M. (1949.) **Haemolysis by Newcastle disease virus.** [Correspondence.]—*Nature. Lond.* **164.** 1008. 389

In this preliminary note B. refers to certain experimental work on the haemolysis which has irregularly been observed when red cells are treated with Newcastle disease virus. The results suggest that the haemolytic agent is the virus particle itself and that haemolysis cannot occur unless the virus particle is adsorbed to the cell surface.—D. LUKE.

DELAPLANE, J. P. (1947.) **Technique for the isolation of infectious bronchitis or Newcastle virus including observations on the use of streptomycin in overcoming bacterial contaminants.**—*Misc. Publ. 19th Ann. Pullorum Dis. Conf., Raleigh, June* 11-12-13. **No. 33.** pp. 3. [Mimeographed.] 390

Field infectious bronchitis virus inoculated *via* the allantoic route showed typical dwarfing effect after the first passage. When the chorio-allantoic route is used several weekly passages are necessary to produce any visible dwarfing effect.

Streptomycin (0·025 g. per unit ml.) added to tracheal exudates was found effective in controlling bacterial contamination in the isolation of both Newcastle disease and infectious bronchitis viruses.—D. LUKE.

DELAPLANE, J. P. (1949.) **The typical pattern of growth of the chronic respiratory disease virus.**—*Misc. Publ. 21st Ann. Pullorum Dis. Conf. Cornell Univ. June* 23, 24, 25. **No. 38.** pp. 3. [Mimeographed.] 391

D. recorded the isolation of virus from 12 different flocks of turkeys and fowls. On the basis of the effect on chick embryos he feels justified in considering them strains of the same virus.

A strain of Hitchner's turkey sinusitis virus gave a similar growth pattern in 7-day embryos. The respiratory disease virus is inactivated by streptomycin. The virus in allantoic fluid was found viable after 18 months at 0° F.
—D. LUKE.

KARRER, H., MEYER, K. F. & EDDIE, B. (1950.) **The complement fixation inhibition test and its application to the diagnosis of ornithosis in chickens and in ducks. I. Principles and technique of the test. II. Confirmation of the specificity and epidemiological application of the test.**—*J. infect. Dis.* **87.** 13-23; & 24-36. [Authors' summaries copied *verbatim*.] 392

I. A method (complement fixation inhibition test) is described which can be applied to the serologic diagnosis of ornithosis in domestic fowl. Serum of chickens immunized against different strains of psittacosis-like virus inhibits the complement fixation which occurs in the presence of antigen and pigeon immune serum.

The importance of quantity of reagent (antigen and pigeon serum), incubation, and origin of the complement-fixing serum are discussed.

II. The complement fixation inhibition test has been applied to the serum of 26 ornithosis-infected and 13 normal chickens (exposed to the infected ones), with positive outcome except for two serums. The results with serums of the same number of normal birds were negative. Weight curves of the infected and exposed groups showed retardation of growth, compared with the normal group. Inhibition titers persisted for at least nine weeks, after which the virus could be recovered from only four of 12 birds.

Inhibition titers were found not earlier than seven days after injection or intranasal instillation of virus. From then on to the 20th day sometimes a rise in titer occurred and sometimes a reduction. Of eight virus strains, six were able to produce inhibiting antibody after one injection. There was no marked correlation between strain and height of titer in the titer-producing group.

In a survey of 269 chicken serums, 24·2% were positive to the inhibition test; of 104 duck serums, 52·9% were positive; and of 48, mostly pooled, turkey serums, 2·1% were positive. Isolation attempts using organs and cloacas of 38 chickens and ducks were successful in six instances.

Pigeon serum either fixed complement or inhibited fixation. One pigeon and one human serum were found positive in both tests. This observation may be of some significance in the serologic investigation of human specimens.

MELNICK, J. L., SHAW, E. W. & CURNEN, E. C. (1949.) **A virus isolated from patients diagnosed as non-paralytic poliomyelitis or aseptic meningitis.**—*Proc. Soc. exp. Biol., N.Y.* **71.** 344-349. 393

A virus was isolated from the stools of patients from Connecticut and Rhode Island suffering from what was diagnosed as non-paralytic poliomyelitis. The isolation was through young mice by intracerebral or intraperitoneal inoculation. Signs of paralysis appeared in 2–10 days, followed by the death of the animal. P.M. examination revealed an extensive myositis. The virus, unlike that of poliomyelitis, failed to infect rhesus monkeys. The sera of infected patients contained a high titre of neutralizing antibodies. Antisera to poliomyelitis, encephalomyelitis, mumps, herpes and other viruses failed to neutralize the virus which appeared to exist in two distinct immunological types.

It was found to be one of the smaller viruses and was not inactivated by either penicillin, streptomycin or chloromycetin. Although virus was not recovered from pooled faeces collected in 1944 from patients with paralytic poliomyelitis in New York City or Los Angeles, California, in 1938, positive isolations were made in the case of pooled faeces from non-paralytic cases in 1947 in Ohio and from faeces of paralytic poliomyelitis cases in 1948 in Salem. The virus has been isolated from the sewage of several cities during the summer, but not during the winter months. Flies have been found which give positive isolations for the poliomyelitis virus, others from which the new virus was isolated, while some carried both viruses.

One laboratory worker developed a febrile condition which was diagnosed as a pyrexia of unknown origin and the virus was recovered from the faeces and nasopharyngeal washings during the acute stage of the illness.

—JAMES H. HALE.

EVANS, C. A. (1947.) **Does poliomyelitis virus grow in sewage?**—*Acta. med. scand.* **126.** 541-545. [In English. Abst. from author's summary.] 394

The reported isolations of poliomyelitis virus from sewage indicate that enormous amounts of virus are at times present in a sewerage system. It has been suggested that the virus grows in protozoa or other organisms of sewage. E. failed to demonstrate the growth of virus in protozoa of sewage and an alternate explanation for the large amounts of virus in sewage is now favoured. It is estimated that at times as many as 1% of persons in a city may be excretors of poliomyelitis virus. The amount of virus in feces is sometimes much greater than

is customarily believed. E. infected a monkey with 10 mg. of feces and others have done this with 0·01 mg. in one case and with from 5–50 mg. in another case. These data suggest that fecal pollution may be an adequate explanation of the finding of virus in sewage. The growth of virus in organisms of sewage is not, however, disproved.

HIMMELWEIT, F. (1949.) **Rapid assessment of virus haemagglutinin by the aid of centrifugal and centripetal effects.**—*Nature, Lond.* **164.** 650-651. 395

As centrifugation in the Salk test took 1–2 hours, H. tried to modify it. Centrifugation for 45 sec. followed by a further 30 sec. at an angle of 20° gave the best results. But small fluctuations in the centrifugal force, due to slow centrifugation on a normally high speed instrument, led to variations in repeat tests. In an attempt to circumvent this difficulty and still produce normal haemagglutinin patterns, centripetal force was employed.

The apparatus devised was essentially a wobble plate mechanism. The reagents were mixed in small shallow cells on the plate which was made to oscillate about a central fulcrum by wheels in contact with its under surface. These wheels, three in number, were mounted on vertical arms of different height borne by three horizontal spokes radiating from and revolving around the fulcrum. This apparatus gave reliable readings in 3·5 min. It also enabled titrations of virus haemagglutinins or of agglutination-inhibition antibodies to be carried out on small amounts of material.

—L. M. MARKSON.

GAUD, M. (1949.) **The rickettsioses in Equatorial Africa, "Congolese red fever".**—*Bull. W. H. Org.* **2.** 257-270. [Part of author's summary and conclusions copied *verbatim.*] 396

Various authors have described, under the name of "Congolese red fever", a relatively mild complaint present in endemic form in Central Africa, particularly among Europeans, its essential characteristics being fever, and a rubeola-like exanthema.

At first this disease was linked with dengue and has even been identified with it by different authors. Recent research has shown that cases of murine or classical typhus in the Belgian Congo have been classified as "Congolese red fever". The work of the Institut Pasteur, Brazzaville, has, however, demonstrated the occurrence in man of a tick-borne typhus, which has also been called "Congolese red fever", and of which the dog is the reservoir of virus and *Rhipicephalus sanguineus* the vector.

The term "Congolese red fever" does not, therefore, designate any specific disease; it covers various disorders which should be separated from one another and linked up with their causal agent. Thus the designation "Congolese red fever" leads to confusion and should no longer be used.

PARROT, L. & PARROT, G. (1949.) Sur la prémunition dans les rickettsioses. [**Premunition in rickettsial diseases.**]—*Arch. Inst. Pasteur Algér.* **27.** 257-261. 397

Parrot, G. (1937) propounded the theory that the protection against re-infection following an attack of a rickettsial disease was due to the persistence of the infective agent in the body after the acute phase of the disease and not to a sterile immunity, *i.e.*, that the condition was one of premunition. The authors restate this theory in the light of more recent findings.

The following records are quoted to show that latent infections persist for a long time after apparent cure. 'Q' fever infection was isolated from a g. pig 110 days after inoculation. Scrub typhus infection was isolated from a g. pig 635 days after inoculation. Recovered cases of trench fever can infect lice for two or three years and probably longer. The record is quoted of the spontaneous appearance of exanthematic typhus in a subject who had recovered from an attack 27 years earlier. Cases of Brill's disease are believed to be manifestations of the same phenomenon.

Premunition, which is due to the presence of live organisms in the body and which may last for years, is compared with the protection due to killed vaccines where the protection lasts for only six months.

The BCG tuberculosis vaccine is quoted as a premunizing vaccine.—ANGUS FOGGIE.

PAYZIN, S. (1949.) La Q. fever en Turquie. [**'Q' fever in Turkey in man and animals.**] —*Arch. Inst. Pasteur Maroc.* **4.** 13-18. 398

This is an account of the recognition of Q fever in man in Turkey, where outbreaks may assume epidemic proportions. Diagnosis is confirmed by g. pig inoculation and by complement-fixation tests on sera from cases.

Examination of sera from random groups of animals gave the following results: 10 out of 39 sheep sera contained antibody, 3 out of 22 goat sera contained antibody, 4 out of 40 cattle sera contained antibody and 0 out of 18 buffalo sera contained antibody. These find-

ings tend to indicate that the sheep is the main reservoir of *Rickettsia burneti* in Turkey.

—Angus Foggie.

Parker, R. R., Bell, E. J. & Stoenner, H. G. (1949.) **Q fever. A brief survey of the problem.**—*J. Amer. vet. med. Ass.* **114.** 124-130. 399

The authors describe experiments on the infection of cattle with Q fever. Cows inoculated in the mammary gland, either by the teat canal or into the tissue of the gland, produce infected milk from the inoculated quarter and their sera become positive to the complement-fixation test. If a large inoculum is used there is a systemic reaction of brief duration, the blood becomes infective and there is an acute mastitis. In a cow inoculated into the uterus, the milk from the left fore quarter became infectious. Of two calves fed on infective milk one developed pyrexia and the sera of both became positive to the complement-fixation test. Intraocular instillation of infective material in a heifer failed to produce symptoms, but the serum became positive.

The authors discuss the literature on the mode of transmission of the disease in wild animals, domesticated animals and man, with 61 references.—Angus Foggie.

Anon. (1950.) **Experimental Q fever in man.** —*Brit. med. J.* April 29th. pp. 1000. **400**

Of 11 human volunteers who took *R. burneti* infected food, only two developed complement-fixing antibodies. Of 29 infected intradermally, all developed signs of the disease—local papule formation, pain in the lymph nodes and increased temperature. Antibodies could be detected after the 12th day. Only two of ten volunteers infected intranasally developed antibodies after 23 and 29 days.

—Angus Foggie.

Blanc, G., Martin, L.-A. & Maurice, A. (1946.) Sur une rickettsia isolée de tiques dans le Sud marocain. Son identité probable avec *R. burneti*, agent de la Q fever. **[A rickettsia isolated from Moroccan ticks, probably identical with *R. burneti*.]**—*C. R. Acad. Sci., Paris.* **223.** 438-439. **401**

During the investigation of spirochaetosis in colonies of meriones (Gerbillinae) at Goulimine (South Morocco) a large number of *Hyalomma savignyi* were collected near the burrows. Some of these ticks were ground up in saline and a monkey, a mouse and a g. pig were inoculated subcutaneously. None of the animals developed spirochaetosis but the monkey and the g. pig gave febrile reactions. From the latter a rickettsia was isolated which was shown to have the same immunological reactions as the virus of Q fever.

—Angus Foggie.

Blanc, G., Bruneau, J. & Chabaud, A. (1950.) Présence de rickettsia (coxiella) burneti, chez des tiques de l'espèce Amblyomma variegatum recuillies en Afrique Equatoriale française. **[The presence of *Rickettsia burneti* in the tick *Amblyomma variegatum* in French Equatorial Africa.]**—*C.R. Acad. Sci., Paris.* **230.** 474-475. **402**

Q fever infection, having been found in South Morocco [see preceding abst.], the possibility that it has been carried across the Sahara desert by camels was investigated. Examination of specimens of *Hyalomma dromedarii* from Senegal and of *Amblyomma variegatum* from French Guinea gave doubtful results. The Q fever rickettsia was, however, isolated from specimens of *Amblyomma* collected from camels in French Equatorial Africa. This finding indicates that cases of Q fever probably also occur in man in these regions.

—Angus Foggie.

Traub, R., Frick, L. P. & Diercks, F. H. (1950.) **Observations on the occurrence of *Rickettsia tsutsugamushi* in rats and mites in the Malayan jungle.**—*Amer. J. Hyg.* **51.** 269-273. [Authors' summary copied *verbatim*.] **403**

R. tsutsugamushi has been recovered from the tissues of three species of rats (*R. mülleri*, *R. edwardsi* and a species of the *R. rajah* group), which were captured in the primary jungle in Malaya, and from the trombiculid mite *Euschongastia indica*, taken from tree squirrels in the same area. This is the first reported instance of natural infection in these species of rats and in this mite.

Scrub typhus appears to be endemic in certain jungle areas and may involve a number of species of small mammals and mites.

See also absts. **416** (antirabies vaccine); **455** (influenza virus); **460** (milk agent virus).

IMMUNITY

GILLESPIE, H. B., STEBER, M. S., SCOTT, E. N. & CHRIST, Y. S. (1950.) **Serological relationships existing between bacterial parasites and their hosts. I. Antibodies in human blood serum for native intestinal bacteria.**—*J. Immunol.* **65.** 105-113. [Authors' conclusions copied *verbatim.*] **404**

GILLESPIE, H. B., STEBER, M. S. & WAUGH, M. H. (1950.) **Serological relationships existing between bacterial parasites and their hosts. II. The agglutination of intestinal bacteria by blood serum from human beings and animals not known to carry the strains tested.** —*Ibid.* 115-118. [Authors' conclusions copied *verbatim.*] **405**

I. A few antigenically distinct coliform types which normally inhabit the intestinal tract cause certain human beings to produce high concentrations of agglutinating and precipitating antibodies. The antigenic stimulation responsible for such antibody production may continue in the same person for at least four years. Certain other similarly situated aerobic and facultative bacteria do not elicit corresponding antibody responses. Attempts will be made to explain these observations in subsequent reports.

II. Many human beings and animals produce antibodies for certain antigenic types of coliform bacteria. Serum specimens from a few individuals contain the antibodies in surprisingly high concentrations. Such individuals apparently either respond more readily to the antigens involved or are more frequently exposed to them.

BLOMFIELD, A. M., COOMBS, R. R. A. & HOLE, N. H. (1950.) **The conglutination phenomenon. VI. An experimental investigation of the factors determining the adsorption of complement by an antigen-antiserum mixture.** —*J. Hyg., Camb.* **48.** 73-95. [Authors' summary slightly modified.] **406**

Salmonella antisera from a number of animals, including man, were examined by conglutinating complement - absorption and haemolytic complement-fixation tests for the presence of antibodies. Both a soluble antigen and a particulate antigen of washed suspended organisms were used. The behaviour of the antisera was comparable with that previously recorded with the mallein anti-mallein system, in so far as the reactions obtained with the different complements followed the same general pattern.

Two factors were found to explain the failure of certain antisera, in conjunction with the antigen, to adsorb certain complements. On the one hand, a few antibodies themselves appeared incapable of fixing a particular complement. On the other hand, although some antisera failed to fix the specific complements, their antibodies, isolated from the serum, were able to fix the complements concerned. In these cases it appeared that the heated serum contained a non-specific factor that prevented the adsorption of the complements.

The existence of such non-specific factors in certain heat-inactivated sera is illustrated. An examination of the mechanism involved does not appear to implicate the procomplementary effect of sera, although this effect in itself is a complex problem requiring further elucidation. The few experiments carried out indicate that the factor in the inactivated serum does not come into play and inhibit the adsorption of complement by an antigen-antibody complex without the initial intervention of some component of complement. Only after this has occurred is the inhibitory factor able to block any further complement adsorption.

The authors discussed the implications of these experiments and their possible relationships to the complementoid phenomena described by previous workers.

STOKER, M. G. P., COOMBS, R. R. A. & BEDSON, S. P. (1950.) **The application of the conglutinating complement absorption test to virus systems**—*Brit. J. exp. Path.* **31.** 217-232. [Authors' summary modified.] **407**

The haemolytic complement fixation test and conglutinating complement absorption test were compared in vaccinia, influenza and psittacosis-lymphogranuloma venereum antigen antiserum systems.

Crude virus antigens were highly anticomplementary for horse complement. Of the methods investigated to overcome this difficulty, extraction of the influenza antigen with chloroform and benzene-ether extraction of the vaccinia antigen were most successful. In the case of the lymphogranuloma venereum antigen the method used consisted of treating the antigen with horse complement.

The presence of naturally occurring antibodies against virus and normal tissue antigens proved a complicating factor, especially in the conglutinating complement absorption test. The significance of these apparently "non-specific" effects is discussed.

The optimal conditions of fixation for each test in the three systems were determined. In the influenza and vaccinia systems fixation overnight at +4°C. was the most satisfactory for both tests, although for the conglutinating complement absorption test in vaccinia short periods of fixation gave almost as good results. For the lymphogranuloma venereum system two hours at room temperature was the optimal period for both tests.

Using these optimal conditions the sensitivities of the two tests were compared. With rabbit antisera the sensitivity with the conglutinating complement absorption test was only slightly increased. With human antisera the titres demonstrated with this test were 2–8 times higher than those shown by the haemolytic complement fixation test. However, the advantage gained in increased sensitivity with the former test may be offset by the apparent "non-specific" reactions which have to be overcome.

STEIN, G. J. & VAN NGU, D. (1950.) **A quantitative complement fixation test; titration of luetic sera by the unit of 50% hemolysis.**—*J. Immunol.* **65.** 17-37. [Authors' summary slightly modified.] **408**

A quantitative complement fixation test employing the unit of 50% hemolysis was described in detail. In practice the test proved highly sensitive, specific and relatively simple to carry out. Only two 50% hemolytic units were used. This contrasts with the multiple 50% units recommended by other investigators. The underlying advantages and possible applications of the test were discussed.

MARSHALL, A. H. E. & WHITE, R. G. (1950.) **Reactions of the reticular tissues to antigens.**—*Brit. J. exp. Path.* **31.** 157-174 [Authors' summary copied *verbatim*.] **409**

The normal cytology of the reticular tissue of the rabbit spleen has been described. An investigation has been made into the cell changes produced in the spleen and other tissues of the rabbit by the intravenous injection of antigenic substances, the effect of nitrogen mustard upon antibody levels, and the effect of X-radiation upon plasma cells in the lymphatic tissue. It has been shown that: (1) The intravenous injection of various antigens in the rabibt produces a stimulation of primitive reticular cells which leads to the formation of plasma cells in the the spleen, lungs, liver and bone marrow and to the formation of germinal follicles in the spleen only. (2) The function of the germinal follicles is considered to be the formation of lymphocytes. (3) Destruction of lymphocytes by nitrogen mustard does not produce a release of antibody in immunized animals. (4) Plasma cells are highly resistant to both nitrogen mustard and to X-radiation and appear to be stimulated by the latter agent. The significance of these findings is discussed.

DE VRIES, J. A. (1950.) **The effect of adrenocorticotrophic hormone on circulating antibody levels.**—*J. Immunol.* **65.** 1-5. [Author's summary copied *verbatim*.] **410**

Administration of adrenocorticotrophic hormone to previously immunized rabbits failed to produce a rise in circulating antibody levels despite a fall in the number of circulating lymphocytes.

NAYLOR, G. R. E. (1950.) **The formation of precipitates on mixing anti-horse sera.**—*J. Hyg., Camb.* **48.** 52-72. [Author's summary copied *verbatim*.] **411**

Five anti-horse sera which did not contain antibodies for horse-serum crystalbumin have been shown by absorption experiments to contain horse-serum crystalbumin. All five sera precipitated when mixed with other anti-horse sera containing anti-crystalbumin, precipitation being due to the presence of horse-serum crystalbumin in one antiserum and of anti-crysalbumin in the other. Antigen and its homologous antibody were never found together in the serum of an animal, and contradictory results in other experiments are probably due to impure multiple antigens.

It is concluded that anti-horse sera may contain some of the antigenic components of injected horse serum together with antibodies to other antigens of the horse serum, but not homologous antigen and antibody. Consequently, the 'mutual' precipitation of anti-horse sera is due to the presence of a number of antigens in horse serum, one or more of which present in one anti-horse serum, in the absence of its homologous antibody, may precipitate when mixed with another anti-horse serum which contains the homologous antibody.

The use in these experiments of a single α-procedure optimum as the indicator of an antigen-antibody reaction illustrates a method enabling the investigation of problems involving single antigen-antibody reactions, even though the available reagents consist of mixtures of antigens and mixtures of antibodies.

STERNBERGER, L. A. & PRESSMAN, D. (1950.) **A general method for the specific purification**

of antiprotein antibodies.—*J. Immunol.* **65.** 65-73. [Authors' summary copied *verbatim.*] 412

A procedure has been developed which is probably of general applicability for the specific purification of antiprotein antibody. The principle involved is the alteration of the specific antigen so that it can be separated from the antibody brought down in the specific precipitate. The alteration was accomplished by coupling the specific antigen with diazotized arsanilic acid. It was shown that such an antigen can be removed from an alkaline solution by a suspension of calcium aluminate while rabbit serum antibody remains in solution under these conditions. The coupled antigen retained the ability to precipitate specifically the antiprotein antibody.

The purified antibody was obtained from the specific precipitate with the coupled antigen by dissolving the washed precipitate in calcium hydroxide solution and removing most of the antigen with a suspension of calcium aluminate, leaving purified antibody in solution. By this method, solutions of antibody to bovine serum albumin and to bovine serum globulin have been obtained with essentially all of the protein precipitable as specific antibody. The yields were about 30%.

Tompsett, R., McDermott, W. & Kidd, J. G. (1950.) **Tuberculostatic activity of blood and urine from animals given gliotoxin.**—*J. Immunol.* **65.** 59-63. [Authors' summary and comment slightly modified.] 413

Purified gliotoxin was found to inhibit growth of human and bovine type turbercle bacilli *in vitro* when incorporated in various liquid culture media in concentrations of 0·012 to 0·06. micrograms/ml. It was much less active against a number of other bacterial species, the inhibitory concentrations ranging from 125 micrograms/ml for *Ps. aeruginosa* to 4·0 micrograms/ml for *Pneumococcus*, with intermediate concentrations required to inhibit several strains of *Aerobacter aerogenes, Escherichia coli, Trichophyton gypseum,* streptococci, *Staphylococcus aureus*, and *Bacillus subtilis.* In this relation it is noteworthy that gliotoxin is highly active against several types of transplanted cancer cells *in vitro*, as previous work has shown; 1·0 microgram gliotoxin per ml regularly inhibited the subsequent growth in susceptible hosts of suspensions of Gardner lymphosarcoma cells, and concentrations of 5–25 micrograms gliotoxin per ml likewise inhibited the cells of several transpantable carcinomas of mice and rabbits.

Plasma procured from mice, g. pigs, and rabbits within 30 min. after they had been given gliotoxin orally or parenterally regularly inhibited growth of tubercle bacilli in dilutions as high as 1 : 320, and significant degrees of activity persisted for at least two hours in most instances. Urine collected from animals of the three species, two to three hours after they had been given gliotoxin, regularly inhibited growth of tubercle bacilli in dilutions from 1 : 320 to 1 : 1280. Plasma and urine procured from normal control animals of the three species had no tuberculostatic effect in concurrent tests.

The course of experimental tuberculosis in C3H mice was not influenced in several experiments by the prolonged oral administration of purified gliotoxin in daily doses as high as 6·5 mg/kg.

Thiery, J.-P. & Richou, R. (1950.) Sur le dosage de l'antitoxine spécifique dans les sérums antitétaniques. **[Standardization of tetanus antiserum.]**—*Bull. Off. internat. Epiz.* **33.** 293-303. 414

The authors describe the three methods available for standardization of the serum, *i.e.* titration in the g. pig with a fixed dose of toxin, titration in the mouse by a similar method, or *in vitro* by the flocculation test. The *in vivo* mouse method is not recommended. In the *in vivo* methods, the toxin-antitoxin mixtures are maintained for one hour at 18–22° C. before inoculation.—H. Platt.

Thiery, J.-P. & Richou, R. (1950.) Sur le contrôle de l'innocuité et de la valeur immunisante de l'anatoxine tétanique. **[Tests for the safety and activity of tetanus anatoxin.]**—*Bull. Off. internat. Epiz.* **33.** 286-292. 415

The authors describe the tests carried out to ensure the safety and efficacy of tetanus anatoxin. Its innocuousness is tested by the injection of 5cc. into two g. pigs which are observed for one month for any evidence of tetanus. A similar further test is carried out at each stage in its manufacture, with an observation period of 48 hours. Its immunizing power is determined by the flocculation test against a standard serum. Sterility of the preparation is confirmed by cultural examination.
—H. Platt.

Koprowski, H. & LeBell, I. (1950.) **The presence of complement-fixing antibodies against brain tissue in sera of persons who had received antirabies vaccine treatment.**—*Amer. J. Hyg.* **51.** 292-299. [Authors' summary copied *verbatim.*] 416

Sera obtained from individuals who had undergone antirabies treatment with phenolized (Semple type) rabbit-brain tissue vaccine were tested for the presence of complement-fixing antibodies against brain tissue. None of the sera obtained from individuals who received the seven-day course of treatment showed presence of antibodies to brain tissue after vaccination, whereas the sera of 50% of the individuals who received the 14-day course of treatment showed at one time or another presence of such antibodies. Sera obtained from three individuals with neurological complications after anti-rabies treatment were also submitted to the same test; two had very high brain antibody titers and one had a low titer. These findings are discussed in relation to the occurrence of neuroparalytic accidents following antirabies vaccination.

KUHNS, W. J. (1950.) **Isoimmunization in the pig following multiple transfusions of incompatible blood.**—*Proc. Soc. Exp. Biol., N.Y.* **74.** 685-687. [Author's summary copied *verbatim.*] **417**

Multiple transfusions of Pi_1 blood from one pig into two other pigs of anti-Pi_1 specificity resulted in the formation of high titers of "blocking" antibodies of anti-Pi_1 specificity. The implications in experimental hemolytic syndromes and in selective fetal death in the pig are discussed.

BEVIS, D. C. A. (1950.) **Composition of liquor amnii in haemolytic disease of newborn.**—*Lancet.* **259.** 443. [Author's summary copied *verbatim.*] **418**

The precise origin of liquor amnii is doubtful, but it certainly seems to contain some foetal urine.

A test for iron in liquor amnii is described which seems to have some prognostic value, but often the haemolytic processes are found to be too far advanced when labour is induced. Possibly, if the test were applied to liquor obtained by paracentesis in the antenatal period, the induction of labour could be timed more accurately.

FARRELLY, B. T., BELONJE, C. W. A. & CRONIN, M. T. I. (1950.) **The technique of exchange transfusion in the new-born foal.** —*Vet. Rec.* **62.** 403-404. **419**

The technique is described in some detail. —G. FULTON ROBERTS.

PAUTRIZEL, R. & BARTHE, C. (1949.) Action d'endotoxines bactériennes et d'un antihistaminique de synthèse sur les manifestations cutanées au cours du choc anaphylactique local. **[Action of bacterial endotoxins and synthetic antihistamine on skin allergic reactions.]**—*C. R. Soc. Biol. Paris.* **143.** 1190-1191. **420**

Dissociation of the interstitial and cellular phenomena of local anaphylactic shock is possible. Previous injection of the glucolipoid polypeptide of *Salmonella typhi B* or *Bact. coli* inhibits polynuclear neutrophiles but not cellular eosinophiles. Phenergan [N-(2-dimethylamino-n-propyl (phenothiazine hydrochloride] prevents oedema but has only a limited action on the flow of polynuclear neutrophies or eosinophiles.—MALCOLM WOODBINE.

PAUTRIZEL, R., BÉZIAN, A. & NEUZIL, E. (1949.) Etudes sur le mécanisme de production de l'anaphylaxie. Action du formol sur l'antigène. **[Action of formalin on antigens.]**—*C. R. Soc. Biol. Paris.* **143.** 1191-1193. **421**

Using the contraction of intestinal muscle as an indicator, formaldehyde, at concentrations of 1 : 50 to 1 : 200 for 24 hours at 37° C., in the serum gives rise to a latent period and a lower curve of contraction.

—MALCOLM WOODBINE.

See also abstr. **301** (anthrax vaccine); **304** (haemagglutination in TB.); **308** (immunization of mice against TB.); **312** (Johne's disease); **322** (strain 19); **327** (vibrionic abortion in sheep); **342** (trichomoniasis); **360-362** (F. & M. disease); **364** (cow pox); **365** (sheep pox); **366** (fowl pox); **380** (distemper); **388** (Newcastle disease); **397** (BCG in rickettsial infections); **623** (report, Eire); **624** (book, microbiology and immunity).

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

PARAMONOW, S. J. (1949.) Bestimmungstabelle sämtlicher Entwicklungsstadien der Magendasseln. (Fam. *Gastrophilidae*; *Dipt.*). **[Differentiation table of the Family Gastrophilidae.]**—*Z. Parasitenk.* **14.** 27-37. **422**

P. has compiled comprehensive tables to differentiate the various stages of the following species of *Gastrophilus*:— *G. intestinalis, G. veterinus, G. haemorrhoidalis, G. pecorum, G. inermis, G. nigricornis, G. lativentris, G. flavipes* and *G. magnicornis*.—M. L. CLARKE.

VOGELSANG, E. G. & LLAMOZAS, G. P. (1948.) La gastrofilosis de los equinos de Venezuela. **[*Gastrophilus* in horses in Venezuela.]**—*Rev. Med. vet. Parasit., Caracas.* **7.** 203-211. **423**

Gastrophilus intestinalis, G. haemorrhoidalis

and *G. nasalis* were found in horses imported from the Argentine.—M. NORAMBUENA.

DU TOIT, R. & GOOSEN, P. J. (1949.) **D.D.T. for the protection of sheep against blowfly strike.**—*Onderstepoort J. vet. Sci.* **22.** 285-290. **424**

In laboratory experiments, an emulsion containing 5% *p p* isomer of D.D.T. gave a high degree of protection to treated sheep for a period of approximately three months. In field experiments, spraying sheep with about 180 ml. of the same emulsion at concentrations ranging from 2·5–6·0% gave a lower degree of protection, but strikes which occurred were small and did not tend to spread. The protection was more efficient on sheep which were running on dry pasture than on sheep which were grazing lucerne, presumably because scouring was more prevalent on the lush pasture.

The authors conclude that spraying the tail and breech with a 5% *p p* D.D.T. emulsion will afford a degree of protection sufficient to reduce blowfly strike to a minimum during the periods of greatest activity.—G. B. S. HEATH.

STERNBURG, J., KEARNS, C. W. & BRUCE, W. N. (1950.) **Absorption and metabolism of DDT by resistant and susceptible house flies.**—*J. econ. Ent.* **43.** 214-219. [Authors' summary copied *verbatim.*] **425**

A simple method of extraction of DDT and its metabolites from house flies has been developed. The extracts are suitable for analysis by the Schecter-Haller method.

DDT is readily absorbed by both susceptible and resistant strains of house flies. There is little difference in the initial rate of absorption by either strain. The rate of absorption is greatest when high concentrations of DDT are present outside the body, and decreases as the concentration of DDT decreases.

DDT-susceptible house flies are not able to metabolize DDT to form DDE (1, 1-dichloro-2, 2-bis-(*p*-chlorophenyl)-ethylene) or DDA (bis-(*p*-chlorophenyl)-acetic acid). Small amounts of DDT are metabolized to form an unknown compound.

DDT-resistant house flies rapidly metabolize DDT that has entered the body. The main product of metabolism is DDE (1, 1-dichloro-2, 2-bis-(*p*-chlorophenyl) ethylene). Small amounts of DDA (bis-(*p*-chlorophenyl) acetic acid) are also formed. Only small amounts of these metabolites are excreted, whereas large amounts are retained in the body.

BRUCE-CHWATT, L. J. & OOI, K. H. (1950.) **Aircraft disinsectisation in West Africa.**—*Mon. Bull. Min. Hlth. pub. Hlth Lab. Serv.* **9.** 142-147. [Authors' conclusions copied *verbatim.*] **426**

Trials carried out at the Ikeja Airport (Lagos, Nigeria) by means of two aerosol dispensers have shown that a new low pressure Freon-propelled dispenser filled with a 0·3% pyrethrins formulation compares favourably with the Porton-Sparklet CO_2 propelled dispenser filled with a standard insecticide. (Allen's R.587.) The adequate dose was found to be at least 0·06 gms. pyrethrins per 1,000 cubic feet. *Anopheles gambiae* are somewhat more sensitive to the tested formulations than *Aedes aegypti*. There was a lower rate of kill of mosquitoes confined in cages standing near the ventilating door. The necessity of shortening the usually advocated five or ten min. exposure time to a maximum of three min. is emphasized with regard to the microclimate of aircraft in tropical airports.

BUSVINE, J. R. & TEW, R. P. (1950.) **Further experiments with aerosols for the disinsectization of aircraft.**—*Mon. Bull. Min. Hlth publ. Hlth Lab. Serv.* **9.** 80-87 [Authors' recommendations copied *verbatim.*] **427**

On the basis of our experiments we believe that any of the following treatments would be efficient and satisfactory for the disinfestation of aircraft:—(a) Cooper DDT L.P. Aerosol Bomb (0·4% pyrethrins; 3% DDT) functioned for 15 sec. per 1,000 cu. ft. (b) Cooper BHC [benzene hexachloride] L.P. Aerosol Bomb (0·65% pyrethrins; 0·5% BHC), functioned for 10 sec. per 1,000 cu. ft. (c) "Solution J" (0·65% pyrethrins; 0·5% BHC) dispersed by the Porton-Sparklet apparatus at the rate of 10 ml. per 1,000 cu. ft.

The quantities of insecticides dispersed by any of these methods exceeds those of other specifications and thus all have a margin of efficiency.

FURMAN, D. P. & KURTPINAR, H. (1950.) **Residual toxicity of chemicals for black widow spider control.**—*J. econ. Ent.* **43.** 343-347. [Authors' summary copied *verbatim.*] **428**

Laboratory screening and residual deposit spray tests as well as residual spray field tests were made for control of the black widow spider, *Latrodectus mactans*. In screening tests the methoxychlor [an analogue of D.D.T.] was eliminated as being relatively ineffective. In residual tests, toxaphene, dichlorodiphenyl

dichloroethane, and aldrin [a chlorinated derivative of naphthalene] were found to be relatively ineffective. Lindane, technical benzene hexachloride, and chlordane were relatively effective, but not as persistent as DDT which was effective in laboratory tests for over 16 weeks when applied at the rate of 150 mgm. per square foot of surface.

In field tests lindane at 18 mgm. and DDT at 100 mgm. per square foot of surface provided effective control and protection from reinfestation for over 12 weeks and six weeks respectively, when the experiments were terminated.

LEGG, J. (1950.) **A further note on the use of synthetic insecticides in the control of cattle tick** (*Boophilus microplus* Canestrini)**: some preliminary observations with "497".**—*Aust. vet. J.* **26.** 141-142. **429**

Compound "497" [a substance containing chloro derivatives of dimethano naphthalene] was tested as an emulsion spray, at a concentration of 0·1% active ingredient, against heavy tick infestation of cattle. Nearly all the young adults, nymphs and larvae were killed within 24 hours, and older adults and engorged nymphs disappeared after a few days. When concentrations ranging from 0·02%–0·1% were used it was estimated that only a small fraction of 1% of the total number of ticks survived. With the lower concentrations the parasites took longer to die. The host animals were not affected at either higher or lower concentrations. The residual properties of the insecticide have not yet been investigated.

—MARION T. SCOTT.

FELDMAN-MUHSAM, B. (1949.) [**The longevity of fasting ticks** *Hyalomma savignyi*.]—*Refuah vet. Palestine.* 6. 138-142. English ssmmary p. 155. **430**

The mean longevity of fasting imagines at 17·5°C. and 95% relative humidity (R.H.) was approximately one year. Low temperature and high R.H. were also the most favourable conditions for nymphs and larvae.

—JAS. G. O'SULLIVAN.

GRANETT, P. & FRENCH, C. F. (1950.) **Field tests of clothing treated to repel American dog ticks.**—*J. econ. Ent.* **43.** 41-44. [Authors' summary slightly modified.] **431**

Rapid, preliminary field trials of tick repellents can be conducted using impregnated cut trouser legs (portion from bottom to knee). Testers can readily wear a series of treated trouser legs in infested areas and observe the number of ticks crawling on these as well as the numbers crawling on an untreated trouser leg (or one differently treated) worn at the same time. This method appears to afford more reliable information than does the use of treated drag cloths. A practical test of dibutyl adipate and n-hexyl mandelate on coveralls and trousers revealed that an impregnation of two grams per square foot, either from a highly volatile solvent such as acetone or from water emulsion, provided a high degree of protection during a two to four hour period. Adequate protection was evident even when clothing had been impregnated two weeks prior to test.

ANON. (1949.) [**Reports on the use of "SK-9". (Against ticks and lice).**]—*Veterinariya, Moscow.* **26.** No. 6. pp. 34-35. **432**

Widespread trials were made with a 2% emulsion of "SK-9" [chlorinated turpentine oil, 58–60% Cl.] on horses, cattle, pigs, sheep and fowls with infestations of ticks or lice, or with mange or ringworm. Animals recovered completely after one dip or 1–3 applications with a brush. No outbreaks of piroplasmosis occurred, whereas on neighbouring farms still using arsenical washes, outbreaks and infestations continued.—F.A.A.

HERMANN, W. (1950.) Über die Wirkung einiger Hexachlorcyclohexan-Mittel bei der Schafräudebehandlung. [**The effect of some hexachlorcyclohexane preparations in the treatment of mange in sheep.**]—*Berl. Münch. tierärztl. Wschr.* No. 3. pp. 44-46. **433**

The three proprietary products used were an emulsion, a powder and an emulsion containing also phenol and cresol. Each was incorporated in a bath at 38–40°C.; the emulsion at 0·1% appeared to be preferable.

—MALCOLM WOODBINE.

FLORIO, R. & GRATECOS, M. (1947.) Démodexose et pénicilline. [*Demodex* **infestation and penicillin.**]—*Rev. Méd. vét., Lyon et Toulouse.* **98.** 529-533. **434**

The cutaneous infection, attributed to *Staphylococcus albus, Streptococcus pyogenes* and *Proteus vulgaris* in follicular mange in dogs, was successfully treated by intramuscular penicillin in doses of 40,000 units over three days (10 injections of 4 ml.).—MALCOLM WOODBINE.

See also absts. **396** (Congolese red fever); **401** (Moroccan ticks); **402** (*Amblyomma variegatum*); **403** (tsutsugamushi disease and mites; **521** (antibacterial substance from ticks); **533** (dips); **534** (insecticides); **620** (report, Gt. Britain); **621** (report, Australia),

PARASITES IN RELATION TO DISEASE [HELMINTHS]

RIVERA ROJAS, M. R. (1949.) Estudio sobre la distomatosis equina. **[Distomatosis in horses.]**—*Rev. Fac. Med. Vet. Zoot.* **17.** 125-140. **435**

An account of an outbreak of liver fluke infestation on a cavalry stud farm in Colombia, South America. All the foals affected died. It was stated that carbon tetrachloride and male fern extract, and also the following:—essence of chenopodium, "avicholina", "terlosis" and "saguaypicida" were used on the foals without success. The author stated that death was caused not by the liver flukes alone but by complicating intestinal infection. He spoke of both *Fasciola hepatica* and *Dicrocoelium lanceolatum*, but did not state specifically that both were the cause of deaths in the foals. It was stated that this was the first occasion on which liver fluke disease had been reported in horses in Colombia.
—M. NORAMBUENA.

BERRY, E. G., NOLAN, M. O. & GONZÁLEZ, J. O. (1950.) **Field tests of molluscacides against *Australorbis glabratus* in endemic areas of schistosomiasis in Puerto Rico.**—*Publ. Hlth. Rep., Wash.* **65.** 939-950. [Authors' summary copied *verbatim*.] **436**

Eleven chemical compounds which proved effective in killing *Australorbis glabratus* in the laboratory in dilutions of 10 ppm or less were tested on this same species of snail in its natural environment in Puerto Rico. Six of these proved to be very effective molluscacides although the present price of four of them (2, 4, 6-triiodophenol, 2, 4, 6-triiodophenol sodium salt, 2, 4, 6-tribromophenol, and pentabromophenol) may prohibit their use on a large scale. Two compounds (sodium pentachlorophenate and copper pentachlorophenate) are excellent molluscacides and their cost is reasonable. In a stream near Los Peña, sodium pentachlorophenate at 9·5 ppm calculated on a six-hour flow-rate dose destroyed all snails for a distance of 1½ miles downstream in spite of the entrance of three untreated tributary streams within this area. Embryos within the snail eggs were also killed. The compound was lethal to catfish, guppies, and eels, but apparently did not affect crayfish.

The toxicity of the effective compounds for mammals is under further study, and field trials are being extended to other areas.

TODD, A. C., KELLEY, G. W., WYANT, Z. N., HANSEN, M. F. & HULL, F. E. (1949.) **Worm parasites in thoroughbred sucklings and weanlings. A survey of incidence, development, and control.**—*Bull. Ky agric. Exp. Sta.* No. 541. pp. 24. [Authors' summary copied *verbatim*.] **437**

In a study of the ultimate sources, incidence and development of worm infections in 45 Thoroughbred foals at six representative nurseries in central Kentucky during the foaling season of 1948, the more important findings were the following: All the 45 foals passed worm eggs in their feces by eight weeks of age, the average being 2·3 weeks, and five foals had worm eggs in samples of their meconium at birth. The source of first ascaris infection for foals was in small part the concurrent infection of mares but was in the largest part surviving infection on the ground in paddocks and pastures first used by the newborn foals. A second cycle of ascaris infection occurred after the foals were weaned and was derived from the original suckling infections and infection left behind on pastures by the yearlings. The source of strongyle infection for foals was the concurrent infection of the mares which served to contaminate pastures and to make infective strongyle larvae available for the foals.

No methods of animal management or hygienic practices at the six farms were sufficient in themselves to control or prevent worm infections. Except for infections by *Strongloides* sp., which were self-limiting, the control and prevention of worm infections in foals were found to be absolutely dependent upon efficient and proper use of anthelmintics. Best control of ascaris infection occurred when foals received treatment at the time the first infections matured. However, the survey data indicated that better ascaris control could have been obtained if treatment had been administered before the first ascaris infections matured. Incidence of strongyle infection and apparent total worm burden of the foals were directly related to methods of phenothiazine administration to the mares. A system of intermittent low-level phenothiazine doses fed to mares, and to the weanlings, resulted in the most efficient control of strongyle infectoins.

TODD, A. C., HANSEN, M. F., WYANT, Z. N., KELLEY, G. W. & CROWDUS, D. H. (1950.) **Continuous low-level *versus* periodic phenothiazine therapy for thoroughbred yearlings.**—*Bull. Ky agric. Exp. Sta.* No. 545. pp. 8. [Authors' summary modified.] **438**

A comparison was made of the development of strongyle infections in four yearling colts which received therapeutic phenothiazine

treatment only, and the development of strongyle infection in a fifth yearling colt which received daily 2-gram (low-level) doses of phenothiazine. The five colts were at the same farm and were maintained in the same barn; they were turned out together on the same pastures, where thy would have the same opportunities for infection with strongyles.

Low-level phenothiazine treatment reduced strongyle infections and thereby reduced pasture contamination more efficiently than therapeutic phenothiazine treatment. No adverse effects of the two methods of treatment were noted. At postmortem examination a total of 17 bloodworms were recovered from the aneurysm of the animal fed low-level phenothiazine. The other four colts were not available for postmortem examination. On the same day 175 bloodworms were recovered from the aneurysm of a yearling filly, raised on the same farm but on a different pasture, and given the same series of therapeutic phenothiazine treatments administered to the four yearling colts described in this bulletin.

TODD, A. C., HANSEN, M. F., WYANT, Z. N., KELLEY, G. W. & CROWDUS, D. H. (1950.) **Phenothiazine therapy and fertility of strongyle eggs passed by horses**—*Bull. Ky agric. Exp. Sta.* No. 551. pp. 11. [Authors' summary and conclusions modified.] 439

Examinations of more than 45,000 strongyle eggs in the laboratory demonstrated a relationship between amounts of phenothiazine fed to horses and the fertility of eggs produced by their strongyle parasites. A system of low-level phenothiazine therapy (2 grams daily) was found most efficient in reducing the number of eggs passed by infected horses. In addition to reducing the number of eggs passed, the fertility of the strongyle eggs was significantly affected.

NEUMANN-KLEINPAUL, K. & SCHEBITZ, H. (1950.) Die Wirkung des Reconox auf die Strongyliden beim Pferd. [**"Reconox" a phenothiazine preparation in treatment of strongylosis in horses.**]—*Mh. Vet-med.* **5.** 185-187. 440

Details are given of treatment of strongylosis in horses with "reconox", a preparation stated to be identical with phenothiazine. Single doses of 30–35 g. [weight of horses not given] reduced the number of worm eggs in the faeces by 97% but three doses of 20 g. given at 24-hour intervals were considered more suitable. These results suggest that the doses of 0·5 g. per kg. body weight as recommended by the manufacturer were somewhat too high.—E. G.

TODD, A. C., HANSEN, M. F., KELLEY, G. W. & WYANT, Z. N. (1949.) **On treatment of larval *Strongylus vulgaris* (bloodworms) *in situ*.**—*J. Amer. vet. med. Ass.* **115.** 473-474. 441

Two mares were each given a course of treatment with diethylcarbamazine, one orally and the other intravenously. Four more were treated with repeated doses of arsenamide sodium intravenously. Neither drug appeared to have any action against larvae *S. vulgaris* in the anterior mesenteric artery.—M. L. CLARKE.

O'ROKE, E. C. & CHEATUM, E. L. (1950.) **Experimental transmission of the deer lungworm *Leptostrongylus alpenae*.**—*Cornell Vet.* **40.** 315-323. [Authors' summary copied *verbatim*.] 442

Part of the extensive studies of deer lungworms carried on independently by each of the authors is reported. Altogether, 24 experiments were performed, using 22 different deer, most of which were fawns that had not taken solid food or water before they were captured for use as experimental animals.

It was found that *Leptostrongylus alpenae* is not transmissible without undergoing development in another host after being voided as larvae in deer feces. By the use of several species of snails as intermediate hosts, however, infection of the deer with *L. alpenae* could be produced at will.

BROWN, H. W. (1948.) **Recent developments in the chemotherapy of helminthic diseases.**—*Proc. 4th Internat. Congr. Trop. Med. Malar.* pp. 966-974. 443

B. discussed recent developments in the treatment of the following helminth diseases of man, filariasis, trichuriasis, enterobiasis, cestodiasis and schistosomiasis. Among a number of antimony and arsenic compounds which have been tried against *Wuchereria bancrofti* the pentavalent neostibosan and arsenamide were the most effective, but to overcome the disadvantages of repeated intravenous and intramuscular injections of such preparations, hetrazan (1-diethylcarbamyl-4-methyl-piperazine) has been given orally with very good results. Ficin (a preparation from the latex of trees of the genus *Ficus*) has been used for some time against *Trichuris trichiura* and more recently has been found to be effective against *T. vulpis*, but it has the disadvantage of injuring the intestinal mucosa. Emetine hydrochloride has recently been found to be effective but may produce some untoward effects. Ferric ammonium citrate, on the other hand, appears to be effective and relatively non-toxic.

With regard to *Enterobius*, although gentian violet, tetrachlorethylene and phenothiazine have been widely used, none are entirely satisfactory and recently lubisan (m, n-butoxyphenyldiethyl carbamate), and an acridine derivative, acranil, are said to have given satisfactory results. Acranil has also been successfully used against *Taenia saginata* and other tapeworm infections, as has the closely related atebrin. Recently, good results have been obained in the treatment of schistosomiasis by the use of sodium antimonyl tartrate. In discussion on the paper, however, certain toxic effects on the myocardium were said to follow the treatment and promising results were said to occur following the use of miracil-D (1-diethylaminoethylamino-4-methyl thio-oxanthone) against schistosomes.—M. L. CLARKE.

DELAK, M. (1950.) Prilog poznavanju djelovanja hexylresorcinola kao endoparazitika kod pasa. **[Hexyl-resorcinol, an anthelmintic in dogs.]**—*Vet. Glasnik*. **4.** No. 1. pp. 15-29. [German summary.] 444

Hexyl-resorcinol was tried on 65 dogs and was found to be effective against ascarids and *Ancylostoma*. The best system was to starve the dog for 24 hours, then to give *per os* twice at an interval of seven days 0·1 g. of a 20% solution of the preparation in olive oil and finally to starve the dog for 24 hours. There were no harmful after effects.

Of six dogs given the undiluted preparation with minced meat, in two there were depression, loss of appetite, slightly raised temperature and pulse and in a third dog diarrhoea lasting for three days. The undiluted preparation is likely to cause injury to the mucous membranes of the mouth and pharynx.—E.G.

BECK, E. (1949.) Klinische und parasitologische Untersuchungen über die Verwendbarkeit von Mandaverm, Asta-Werke, Brackwede, als Spulwurmmittel beim Pferd. **[The use of a proprietary preparation of mandelic isoamyl ester in treatment of ascaris infestation in horses.]**—*Inaug. Diss., Hanover*. pp. 31. 445

Mandelic isoamyl ester (mandaverm) given to 26 horses in doses of from 3–40 ml. per 112 lb. body weight was well tolerated though there was some transitory disturbance of appetite and digestion with 15 ml. of the ester or more. Of 11 horses dosed with 25–30 ml., total or nearly total cure was effected in nine and the worm count decreased in one of the remaining two. This dosage was well tolerated.—R. MARSHALL.

ORTLEPP, R. J. (1948.) **The ascaris worm of pigs.**—*Fmg. S. Afr.* **23.** 795-797 & 800. 446

A conventional article for laymen which outlines the life history, anthelmintic treatment of infested pigs, and methods of hygiene which might be expected to prevent infection.

—G. B. S. HEATH.

DAVENPORT, H. E. (1949.) ***Ascaris* haemoglobin as an indicator of the oxygen produced by isolated chloroplasts.**—*Proc. roy. Soc.* Ser. B. **136.** 281-290. 447

Comparative experiments with muscle haemoglobin showed the great oxygen affinity of haemoglobin of *Ascaris lumbricoides*. The application of this property is limited by the difficulty of preliminary de-oxygenation. It is necessary to find a hydrogen donator which will bring about de-oxygenation without interfering with the oxygen production of the chloroplasts.—JAS. G. O'SULLIVAN.

SADUN, E. H., KEITH, C. K., PANKEY, M. J. & TOTTER, J. R. (1950.) **The influence of dietary pteroylglutamic acid and of APA liver extract on the survival and growth of the nematode, *Ascaridia galli*, in chickens fed purified and natural diets.**—*Amer. J. Hyg.* **51.** 274-291. [Authors' summary copied *verbatim*.] 448

[APA used in title = antipernicious anaemia factor.]

The effect of purified diets on the host-parasite relationship of chickens to *Ascaridia galli* was studied.

Birds receiving insufficient dietary pteroylglutamic acid were found to have lowered natural resistance to this parasite. Significantly more and longer nematodes were recovered from the deficient birds than from those on the same purified diet to which an adequate amount of PGA had been added. The deficiency caused striking retardation of growth of the chicks, thymic atrophy and hepatomegaly. Blood studies revealed anemia and leucopenia, with a reduction in the number of lymphocytes and basophiles. Conversely, the number of polymorphonuclear leucocytes with eosinophilic granules was considerably increased in the deficient chicks. It is suggested that the thymic atrophy and the leucopenia of PGA deficiency may be partially responsible for the reduced degree of resistance, through their adverse effect on the antibody-forming mechanism.

The worms from chicks on a purified diet containing minimal amounts of vitamin B_{12} were much smaller than those from chicks receiving a commercial starter diet. In studying the effect of different purified diets on the

growth of worms, it was found that worms from chickens that received with their food large amounts of injectable liver extract were significantly longer than those from chickens receiving whole dried liver or no liver at all. It was concluded that there is a substance in the liver extract necessary in relatively large amounts for the normal growth of the worms. This substance may be vitamin B_{12} or the anti-pernicious-anemia factor. Chickens receiving injectable liver extract grew more rapidly, had a larger thymus and spleen, and a smaller liver relative to their body weight, and fewer lymphocytes than their controls.

RIEDEL, B. B. (1950.) **The effect of cecal coccidiosis upon the susceptibility of chickens to *Ascaridia galli*.**—*Poult. Sci.* **29.** 530-532. [Author's summary slightly modified.] **449**

A series of experiments was performed to note if chickens [four weeks old.—Ed. *V.B.*] infected with cecal coccidiosis were predisposed to ascariasis, their resistance to ascarids being determined on the basis of the average numbers and lengths of worms harbored.

The results indicated that growing chickens infected with 300 embryonated *Ascaridia galli* ova on the sixth day after infection with 30,000 sporulated *Eimeria tenella* oocysts were as resistant to ascarids as chickens in which the ascarid infection was not preceded by cecal coccidiosis.

BRYGOO, E. (1949.) Essai de traitement de la filariose (*F. loa* et *F. perstans*) par le 3.799 R.P. **[Treatment of filaria infection.]** —*Bull. Soc. Path. exot.* **42.** 313-323. **450**

Five cases of filariasis caused by *Filaria loa* and *F. perstans* in human beings, were treated with hetrazan, 1-diethyl carbamyl-4-methyl-piperazine, 10 mg. per kg. body weight being well tolerated. The drug was more effective against the more pathogenic *F. loa* and an eosinophilia occurred during the treatment of three cases.—JAS. G. O'SULLIVAN.

See also abstr. **472** (resistance to ascarids); **555** (*Ascaris lumbricoides*); **605** (enumeration of helminth ova); **620** (report, Gt. Britain); **621** (report, Australia); **623** (report, Eire).

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

SYVERTON, J. T., DASCOMB, H. E., WELLS, E. B., KOOMEN, J., JR. & BERRY, G. P. (1950.) **The virus-induced rabbit papilloma-to-carcinoma sequence II. Carcinomas in the natural host, the cotton-tail rabbit.**—*Cancer Res.* **10.** 440-444. [Part of authors' summary copied *verbatim*.] **451**

Cancers commonly develop from virus-induced papillomas (Shope) in the natural host, the cotton-tail rabbit. Thirty-two of the 127 cotton-tail rabbits which were kept under observation for more than six months, yielded 106 tumors, which were proved to be epidermoid carcinomas by histologic study. Metastases occurred in 19 of the 32 rabbits. Attempts to recover papilloma virus from the carcinomas met with failure in 106 instances; yet the virus was readily recovered from 12 of the 40 benign papillomas which were removed from 26 of the 32 rabbits that also had proved cancers.

The development of cancers from papillomas in more than one-fourth of the cotton-tails under observation is similar to the development of cancer in the experimental host, the domestic rabbit. It may be concluded from these results that many of the hypothetical considerations which were founded on the supposed rarity of cancer in the natural host for the papilloma virus, the cotton-tail rabbit, are no longer tenable.

SYMMERS, W. ST. C. & THOMSON, A. P. D. (1950.) **A spontaneous carcinoma of the skin of a ferret (*Mustela furo L.*).**—*J. Path. Bact.* **62.** 229-233. [Authors' summary slightly modified.] **452**

A squamous carcinoma with areas of basi-squamous and sebaceous structure arising spontaneously in the skin of a ferret is described. This is believed to be the first record of neoplastic disease occurring in this animal. The tumor was excised and no recurrence or metastasis was found at necropsy 132 days later (211 days after the lesion was first noticed). The animal died of septicaemia caused by a β-haemolytic strepococcus, Lancefield group G.

ARKIN, A. M. & SUGIURA, K. (1950.) **Effects of increased pressure upon Sarcoma 180.**—*Cancer Res.* **10.** 272-282. [Authors' summary copied *verbatim*.] **453**

Sarcoma 180 was subjected to increased local compression, by implantation into the tail of mice of the Rockland Farms albino strain, with resulting retardation of tumor growth, increase in the frequency of tumor hemorrhage, and increase in the regression rate. Compression decreased the transplantability of this tumor, under the conditions outlined. Compression of the tumor-bearing mice, *in vivo*, resulted in retardation of tumor growth,

and increased susceptibility to tumor hemorrhage. These effects seem to have been due to compression itself and not to any variation in the concentration of oxygen.

KIRKMAN, H. & BACON, R. L. (1950.) **Malignant renal tumors in male hamsters *Cricetus auratus* treated with estrogen.**—*Cancer Res.* **10.** 122-124. [Authors' summary modified.] **454**

Repeated treatment of male hamsters with diethylstilbestrol was followed by the appearance of multiple cortical tumors in both kidneys. The exact origin or origins of the tumor cells is still under investigation. Ultimately, the tumors became malignant, but mestastases have not been observed outside the abdominal cavity.

STEINER, P. E. & LOOSLI, C. G. (1950.) **The effect of human influenza virus (Type A) on the incidence of lung tumors in mice.**—*Cancer Res.* **10.** 385-392. [Author's conclusions slightly modified.] **455**

Human influenza virus (type A, PR-8 strain) was a powerful growth stimulant to regenerating bronchial epithelial cells in mice, but it did not induce tumors. It was a growth stimulant—an epitheliagen—but not a carcinogen. The experimental work with mice did not support the theory of a causal relationship between influenza infection and lung cancer.

MOON, H. D., SIMPSON, M. E., LI, C. H. & EVANS, H. M. (1950.) **Neoplasms in rats treated with pituitary growth hormone. I. Pulmonary and lymphatic tissues.**—*Cancer Res.* **10.** 297-308. [Authors' summary copied *verbatim*.] **456**

Repeated injection of adult female rats with pure growth hormone, for long periods, resulted in a continuous general body growth response similar to that previously reported. Lymphosarcomas of the lung occurred in six of fifteen rats injected with pituitary growth hormone, whereas no similar tumors occurred in the control rats. In all rats injected with growth hormone, there was hyperplasia of peribronchial lymphoid tissue. Lymphosarcomatous transformation was observed in areas of peribronchial lymphoid hyperplasia.

SNAPP, R. H., NIEDERMAN, D. J. & ROTHMAN, S. (1950.) **Experiments on the theory of photochemical formation of carcinogens from skin fats.**—*Cancer Res.* **10.** 73-76. [Authors' summary copied *verbatim*.] **457**

Irradiation products of skin surface fats, including digitonin-precipitable sterols, isocholesterols, and total unsaponifiable fractions, were painted on the ears of white mice for periods of from 15 to 18 months, but failed to produce precancerous or cancerous changes that could be noted histologically. Therefore, the theory of photochemical formation of carcinogenic compounds on the surface of the skin by ultraviolet irradiation could not be substantiated by this method.

SILVERSTONE, H. & TANNENBAUM, A. (1950.) **The effect of the proportion of dietary fat on the rate of formation of mammary carcinoma in mice.**—*Cancer Res.* **10.** 448-453. [Authors' summary modified.] **458**

To determine the relationship between the proportion of fat in the diet and the resultant enhancement of the formation of spontaneous mammary carcinoma, the authors used: (1) C3H strain mice, with diets based on commercial components and four levels of dietary fat: 1·6, 5·7, 12 and 26%, and (2) dba strain mice, with diets composed of semi-purified components and five levels of dietary fat: 2, 4, 8, 16, and 24%, the diets being isocaloric, and the mean body weights similar. In both experiments, the rate of formation of mammary carcinoma, as measured both by incidence of tumors and by the average time of tumor appearance, tended to increase with increasing proportions of dietary fat. However, the effect was not arithmetically proportional to the level of fat: the enhancement of tumor formation resulting from increasing the dietary fat from 2 to 6 or 8% was as great as that resulting from increasing the dietary fat from 6 or 8% to 24 or 26%. In contrast to the effect on tumor formation, phenomena related to the growth of the mammary carcinomas — increase in tumor size, survival time of the animal after appearance of the tumor, or the incidence of grossly visible metastases to the lungs—were not affected by the proportion of dietary fat in the range studied. The decrease in energy expenditure of utilization of high-fat rations is too small to account entirely for the observed enhancement of tumor formation. Other suggestions are made, but it must be concluded that, at present, the mechanism through which fat-enriched diets accelerate the formation of spontaneous mammary carcinoma and carcinogen-induced skin tumors of the mouse is not known.

MARK, D. D. (1950.) **Distribution of lipase in preneoplastic and neoplastic states induced in the rat liver by paradimethylaminoazobenzene.**—*Arch. Path.* **49.** 545-554. [Authors' summary copied *verbatim*.] **459**

A method designed for the detection of

lipase in tissue sections and using a stearic ester of sorbitan or of mannitan as substrate has been applied to the study of the distribution of lipase activity in the liver of (1) rats fed a stock diet or a rice and carrot diet (controls) and (2) rats fed a rice and carrot diet containing paradimethylaminoazobenzene ("butter yellow").

In the livers of the rats fed the control diet, lipase activity was found in the cytoplasm of the hepatic cells, and appeared more concentrated in cells about the central veins than in those about the portal spaces. The bile duct cells were devoid of any lipase activity.

In the livers of the rats fed the diet containing paradimethylaminoazobenzene the observations were as follows: (1) No reaction indicating lipase activity was detected in localized areas of advanced fatty degeneration, in the cells of proliferating bile ducts or in the cells of cancerous hepatoma. (2) In areas of hyperlasia of hepatic cells the lipase activity was weak or absent.

The results of the experiments suggest that the changes produced in the rat liver by paradimethylaminoazobenzene coincide with a weakening or a complete disappearance of lipase activity in lesions, precancerous and cancerous, which appear to be derived from hepatic cells.

HUSEBY, R. A., BARNUM, C. P. & BITTNER, J. J. (1950.) **Titration of the milk agent virus in milk and lactating mammary gland cells.**—*Cancer Res.* **10.** 516-520. [Authors' summary copied *verbatim.*] 460

In this titration experiment the concentration of the milk agent virus was found to be as great in the milk as in the mammary gland cells producing that milk. This has been interpreted as indicating rather rapid duplication of the virus during lactation.

Some chemical analyses are given which indicate that at the dilution considered to be the 50% end-point of the titration each animal received 2·32 mγ of microsomal nitrogen and 0·247 mγ of PNA phosphorus. The probability that the microsomal fraction is very impure, as far as the milk agent virus is concerned, is emphasized.

An investigation employing the electron microscope failed to reveal a characteristic particle in these impure preparations.

FEINSTEIN, R. N. (1950.) **Effects of a growth inhibitor and other factors on the tissue cathepsins of tumor-bearing rats.**—*Cancer Res.* **10.** 93-95. [Author's summary copied *verbatim.*] 461

The catheptic activity of rat spleen, liver, and tumor (Walker carcinoma 356) has been determined under the influence of a variety of treatments. In confirmation of earlier work, it is shown that the presence of this tumor causes an increased catheptic activity in the host tissues. Treatment of tumor-bearing animals with 4-dimethylaminostilbene hydrochloride, a potent tumor growth inhibitor, increases the catheptic activity of the tumor; it also decreases the catheptic activity of the spleen of the starved, tumor-bearing rat, and has a tendency, not mathematically significant, to decrease also the catheptic activity of the liver and spleen of the fed, tumor-bearing rat. Starvation increases tumor catheptic activity. Treatment of a starved animal with the stilbene compound further increases the tumor's catheptic activity.

PIKOVSKI, M. & DOLJANSKI, L. (1950.) **Studies on the relationship between sarcoma and leukosis in chickens. II. Histogenesis of tumors induced by intramuscular inoculation of cell-containing leukotic material.**—*Cancer Res.* **10.** 1-7. [Part of authors' summary copied *verbatim.*] 462

Cell-free leukotic material never produced a tumor at the site of inoculation, whereas the same material containing live hemocytoblasts regularly induced a tumor at the site of inoculation. A description of different parts of such tumors is given and a parallel is drawn between the fate of stem cells *in vitro* and *in vivo*. A discussion on the histogenesis of tumors produced by "pure" leukotic strains points to the supposition that such tumors are probably a result of multiplication and transformation of stem cells present in the inoculum.

MURPHY, J. B. & STURM, E. (1950.) **The effect of adrenal grafting on transplanted lymphatic leukemia in rats.**—*Cancer Res.* **10.** 191-193. [Authors' summary copied *verbatim.*] 463

Rats in which the adrenals were removed and reimplanted intraperitoneally, with two additional adrenals from another rat, showed a definite increased resistance (73·9%) to a transplanted lymphatic leukemia over that of control animals (17·5%). The removal and reimplantation of the adrenals, one in the abdominal cavity and one in the spleen, without the addition of homoplastic adrenals, failed to induce any significant increase in resistance. The introduction of two homoplastic adrenals into intact rats reduced susceptibility to inoculated leukemia to 57·5%, as compared to 82·5% for

the controls; and in a second experiment to 44·1%, as compared to 87·8% in the controls. The simple removal of the adrenals resulted in a 100% susceptibility to leukemia, a finding which confirms an earlier observation.

LAW, L. W. (1950.) **Studies on the effects of a guanine analog on acute lymphoid leukemia of mice.**—*Cancer Res.* **10.** 186-190. [Author's summary copied *verbatim.*] **464**

A definite, regular, and reproducible inhibition of two transplantable acute lymphoid leukemias in mice resulted from parenteral administration of the guanine analog, guanazolo. No effect of this compound on a transplantable lymphosarcoma was observed. Apparent release of inhibition by the use of guanine HCl is recorded.

INNES, J. (1949.) **Chemotherapy in reticulosis.**—*Edinb. med. J.* **56.** 481-492. **465**

The author discussed the use of the following substances: arsenic in chronic myeloid leucaemia; urethane in chronic myeloid and chronic lymphatic leucaemia, and in multiple myeloma; nitrogen mustard in inoperable neoplastic disease and Hodgkin's disease; stilbamidine and pentamidine in multiple myeloma; and folic acid antagonists—aminopterin—in leucaemia, both acute and chronic.

In this field of chemotherapy related to cellular nucleic acid metabolism there are signs of much promise.—W. R. BETT.

BUCHER, N. L. R. & GLINOS, A. D. (1950.) **The effect of age on regeneration of rat liver.**—*Cancer Res.* **10.** 324-332. [Authors' summary and conclusions copied *verbatim.*] **466**

Regeneration of the liver following partial hepatectomy has been studied in three groups of rats: young, adult, and old. The livers of the young rats exhibited smaller cells and a much higher degree of binuclearity. Those of the old rats were often indistinguishable from the adults, although they did frequently show certain abnormalities which were rare in the younger animals. During regeneration, the changes in the histological picture were similar in all three groups. In young rats, regeneration was superimposed upon the normal process of body growth; hence, this group was not strictly comparable to the others. When corrections were made for the various factors associated with growth, however, it seemed that these rats still greatly exceeded the others, in ability both to restore liver mass and to form new cells. The old rats equalled the adults in ability to regenerate liver mass but lagged behind somewhat in cell production.

BISKIND, G. R., KORDAN, B. & BISKIND, M. S. (1950.) **Ovary transplanted to spleen in rats: the effect of unilateral castration, pregnancy, and subsequent castration.**—*Cancer Res.* **10.** 309-318. [Authors' summary slightly modified.] **467**

A regular sequence of events occurs after one ovary has been transplanted into the spleen of a castrate rat. After the initial inflammatory reaction has subsided, there is a constant development of new follicles which luteinize. These corpora lutea do not involute, and from them, after five months or more, a luteoma appears. Subsequently, a granulosa-cell tumor may replace a luteoma. If an ovary is transplanted into the spleen of a unilaterally castrate rat, the intrasplenic ovary atrophies. The growth potentialities of this atrophic intrasplenic ovary become evident as soon as the normal ovary is excised. The effect of pregnancy on the intrasplenic ovary of unilateral castrates is to produce active follicular growth usually without the formation of corpora lutea. Following termination of the pregnancy, the intrasplenic ovary atrophies; however, simultaneous termination of the pregnancy and castration produce active growth in the intrasplenic ovary.

The changes that take place in the ovary transplanted to the spleen of a unilaterally castrated rat were examined in 30 animals at intervals varying from one to 465 days. The transplant undergoes a progressive decrease in size, rarely contains corpora lutea, the number of follicles decreases, and the stroma contains cords of large cells that resemble thecal cells. Despite this atrophy, if the normally situated ovary is removed, the transplant is capable of growths characterized by the continuous formation of many follicles which undergo luteinization. These findings were demonstrated in thirteen animals. The effect of pregnancy on the intrasplenic ovary in the unilateral castate was examined in 22 animals. In twelve that were killed at the time of parturition or the next day, the transplant revealed many small follicles: in only one was there a corpus luteum. The remainder were examined at intervals after parturition, and the transplant decreased in size, contained fewer and smaller follicles, and in three there were remnants of one or two corpora lutea. Again, removal of the normally castrated ovary at the termination of pregnancy permitted the intrasplenic ovary to undergo a somewhat accentuated follicular and luteal growth.

MORRIS, D. S., MCDONALD, J. R. & MANN, F. C. (1950.) **Intra-ocular transplantation of heterologous tissues.**—*Cancer Res.* **10.** 36-48. [Authors' summary and conclusions copied *verbatim.*] **468**

Transplants of 40 malignant tumors of human beings into the anterior chambers of 167 g. pigs did not survive, with one exception. In this single exception partial survival of resistant squamous-epithelial elements occurred with a marked reaction of the host. Transplants of four malignant tumors and one specimen of normal tissue from human beings within the lens of the eyes of five g. pigs survived, and in at least one case the transplant grew. The lenticular capsule prevented vascularization, infiltration, and destruction of the intralenticular transplants which were nourished by inhibition of nutrient material from the intraocular fluids through the capsule. Thus the avascular, intralenticular transplants are tantamount to *in vivo* tissue cultures. Intralenticular transplantation is probably of limited value in assessing the biologic characteristics of neoplasms, since these limited observations suggest that any heterologous tissue, benign or malignant, will survive within the lens.

See also abst. **625** (book, cancer).

NUTRITIONAL AND METABOLIC DISORDERS

RAJENDRAN, M. S. (1949.) **Investigation into the causes of general deterioration of cattle in Malabar and South Kanara (Madras Presidency).**—*Indian J. vet. Sci.* **19.** 59-67. **469**

Four groups each of 12 yearling indigenous bull-calves were kept on different planes of nutrition for a period of 20 months. All groups except one were given an anthelmintic mixture containing nicotine and copper sulphate. Better growth rate was observed in the group given a balanced ration with vitamin A and D as supplements.—K. C. SINHA.

THOMPSON, D. S. (1950.) **The effect of nutrition on the in-lamb ewe.**—*J. Dep. Agric. S. Aust.* **53.** 352-355. **470**

Two hundred Dorset-Merino cross-bred ewes, after mating with Southdown rams, were divided into four groups of 50 each. Groups (1), (2), and (3) were penned in yards about 11 weeks prior to lambing and were fed cereal straw chaff, wheat and linseed. Group (4) grazed in a paddock with access to supplementary feed of cereal chaff and oats.

After one month group (2) received 5 ml. per head per day of cod liver oil in the feed, and group (3) was put on a lowered ration of straw chaff and wheat.

During the ten weeks prior to lambing ten marked ewes in each of groups (1) and (2) gained an average of 16 lb. body weight, and ten marked ewes in group (3) lost 8 lb.

Losses from pregnancy toxaemia before lambing were seven ewes in group (3) and none in the other groups. Lamb losses were two in group (1), six in group (2), 21 in group (3) (13 of the 21 being lost *in utero*), and none in group (4). Birth weights of single lambs in group (4) were significantly higher than those in group (3). Twin lambs in group (3) were significantly lighter than those in the other three groups. There was no evidence that the addition of vitamin A (in cod liver oil) had any effect on ewes or lambs, nor were ill effects observed to follow absence of exercise for ewes fed in pens during the later stages of prgnancy.

After lambing all ewes were run in a single flock on fairly good feed. There were no significant differences between the average growth rates of lambs in the four groups, but the heavier lambs at birth grew faster than the lighter ones.

It is concluded that (a) green feed is not necessary to ewes in-lamb if abundant dry feed is available, and (b) in-lamb ewes need be fed only enough to prevent occurrence of pregnancy toxaemia in the flock.—J. F. BARRETT.

REID, R. L. (1950.) **Studies on the carbohydrate metabolism of sheep. I. The range of blood-sugar values under several conditions.**—*Aust. J. agric. Res.* **1.** 182-199. [Author's summary modified.] **471**

The literature dealing with the normal range of blood-sugar values in ruminants and with the effect of varying nutritive conditions upon it is reviewed. Attention is drawn to differences between ruminant and non-ruminant mammals, and an attempt is made to explain them in the light of present knowledge of digestive processes in the ruminant. Data are presented on the normal range of blood-sugar values in sheep, both in Australia and in England, and on the effect of nutritive factors and of pregnancy on these values.

The mean blood-sugar values determined by the author in non-pregnant ewes in Australia and in England were $34{\cdot}8 \pm 3{\cdot}06$ and $39{\cdot}1 \pm 3{\cdot}37$ mg. % respectively. The observed

range in both pregnant and non-pregnant ewes was 18–57 mg. %, but 94% of values fell between 25 and 46 mg. %.

The level of blood sugar was affected neither by the plane of nutrition nor by the bodily condition of non-pregnant ewes. Gestation in ewes in good condition was observed not to affect the level, although evidence was obtained of lowered blood-sugar levels during the last two months of gestation in ewes in poor condition.

Expressed as a percentage of the pre-fasting level, the decrease in blood sugar observd during a four-day fast was similar to that observed in non-ruminants, but the response was delayed. Fasting for a period of 24 hours had little effect on the blood-sugar level in non-pregnant sheep in good condition; in many cases there was little change after the period had been extended to 46 hours. On the other hand, a fast of 24 hours' duration produced a marked hypoglycaemia in ewes in poor bodily condition during the last two months of gestation, blood-sugar levels as low at 8·6 mg. % being recorded.

ACKERT, J. E. (1947.) **Soybean oil meal supplement effective in maintaining resistance to ascarids.**—*Kuba.* **3.** 92-94. **472**

For chickens up to two months old, a 14% by weight, supplement of soya-bean meal to a basal cereal ration, can be substituted for the same amount of meat or of meat and powdered milk, in order to maintain their resistance to *Ascardia galli*.—JAS. G. O'SULLIVAN.

DEMERS, J. M. & BERNARD, R. (1950.) **Further work on the nutrition of ducklings. A. Lipotropic factors. B. Sulphur amino acid requirements.**—*Canad. J. Res.* Sect. E. **28.** 202-211. [Authors' summary slightly modified.] **473**

Using a purified diet deficient in choline and containing 18% casein, it has been found that in the duckling: (a) betaine and aminoethanol have little or no lipotropic activity, are poor growth factors, and cannot prevent perosis; (b) monomethylaminoethanol and dimethylaminoethanol, on the other hand, have well marked lipotropic activity. Both substances stimulate growth and are anti-perotic, dimethylaminoethanol being the most active of the two in these respects; (c) ducklings, like chicks, appear unable to methylate aminoethanol to any extent; (d) a level of 28% casein is more satisfactory than one of 18% in the prevention of fatty infiltration of the liver in ducklings.

Betaine and methionine have a definite lipotropic activity, when fed to ducklings along with a semipurified diet containing peanut meal as the only natural ingredient. The substitution of yellow maize meal for sucrose in the above semipurified diet inhibits the lipotropic activity of methionine, without affecting that of betaine.

The availability of a protein low in sulphur amino acids has resulted in the preparation of a more hypolipotropic diet. On this diet, ducklings presented livers containing on the average, 24% of lipids. Methionine added to this diet is strongly lipotropic, but is without effect on growth. Methionine will promote growth only in presence of choline.

Ducklings like chicks and poults appear to be able to convert methionine to cystine. In presence of 0·4% cystine, approximately 0·5% methionine is required for normal growth.

GULLBERG, S. & VAHLQUIST, B. (1950.) **The efficiency of an iron-molybdenum preparation as evaluated by means of iron absorption tests.**—*Blood.* **5.** 871-873. [Authors' summary copied *verbatim*.] **474**

The iron absorption tests reported do not indicate that molybdenum improves the absorption of iron (in these tests, Mol-Iron was used). If there is a better effect in clinical trials, it must be explained by other mechanisms.

GARNER, R. J. (1950.) **Some observations on the status of mineral nutrition of Nigerian cattle.**—*J. comp. Path.* **60.** 108-116. [Author's summary copied *verbatim*.] **475**

Evidence is put forward to suggest that deficiencies of calcium, magnesium, phosphorus, copper and cobalt might occur in cattle in the vicinity of Vom, Plateau Province, Northern Nigeria. The status of mineral nutrition of stock with regard to these elements and to iron, manganese and molybdenum has been investigated. No deficiency of the elements under consideration has been detected and no trouble is likely to be encountered from an excess of manganese or molybdenum.

JAMIESON, S. & ALLCROFT, R. (1950.) **Copper pine of calves.**—*Brit. J. Nutrit.* **4.** 16-31. [Abst. from authors' summary.] **476**

A pining condition is described in calves at pasture in certain areas of Caithness. The disorder was characterized by a stilted gait, discoloration and sometimes depigmentation of the hair and progressive cachexia resulting in death in severe cases.

The copper status of these calves was very low, as shown by blood-copper value of 0·01–0·04 mg./100 ml. and by liver-copper values of 4·2–7·2 p.p.m. in D.M. [dry matter].

Pasture samples from fields on which the disorder occurred had copper values from 4·8 to 20·8 p.p.m. in D.M. and molybdenum values from 3·8 to 19·5 p.p.m. in D.M The condition occurred as often on pastures containing 1·1 and 4·3 p.p.m. molybdenum as on pastures containing 16 and 19·5 p.p.m. It would appear therefore that a high molybdenum intake is not the chief factor in limiting absorption or storage of copper in the animals.

Small supplements of copper as copper sulphate cured and prevented the disorder. As little as 50 mg. copper intravenously, or 500 mg. by mouth, given once, was sufficient for normal development but was not sufficient to increase blood- or tissue-copper values to normal limits. Administration of three 5 g. doses of copper sulphate at monthly intervals increased blood-copper values to a mean of 0·078 mg./100 ml. for four calves, compared with a mean of 0·032 mg./100 ml. for four untreated calves. The copper content of the liver was 18·9 p.p.m. compared with 5·2 and 6·2 p.p.m. in D.M. for two untreated control calves.

The molybdenum values of blood of nine cows and nine calves on pastures with molybdenum contents of 16·1 and 19·5 p.p.m. in D.M. were slightly higher than for eight cows and eight calves on pastures with molybdenum contents of 3·8 and 4·3 p.p.m. in D.M.

Other blood constituents such as inorganic phosphrous, calcium, magnesium and haemoglobin were within normal limits in pining calves.

Seven calves were killed for P.M. examination. Fatty degeneration of the liver was found in the five that received no copper but not in the two given copper. An unclassified globular granulation of the liver cells was noted in untreated calves, and to a lesser extent in treated calves. In the kidneys of untreated calves cloudy swelling was observed and in two of these animals renal perivascular monocytosis was present. Anaemia was not noted in either treated or untreated animals.

Seven hundred and twenty-one blood samples from cattle on 123 farms in Caithness showed that 63·7% of the blood-copper values for both calves and cows were low. Haemoglobin values were within the normal range.

Two-thirds of 45 random liver samples from cattle sent to slaughter-houses in Caithness had copper values of less than 20 p.p.m. on a dry-matter basis. Of 42 samples of bovine liver from slaughter-houses in Aberdeenshire, only one-quarter contained less than 20 p.p.m. in D.M. Investigation of farms from which these samples came showed in animals from six months to one year old a condition clinically similar to the pining symptoms seen in Caithness.

It is concluded that the condition of pine in calves in Caithness is due to a low copper status of the animal and can be cured, or prevented, by small supplements of copper. This low copper status in the animal is not due to a deficiency of copper *per se* in the pastures, and it is suggested that there is some factor present or absent in the pastures which seriously interferes with the metabolism of copper in calves, particularly of certain beef breeds, at a critical time in their development from two to six months of age.

CUNNINGHAM, I. J. (1949.) **Sheep dosed with minerals eat as much lick as undosed animals.** —*N. Z. J. Agric.* **78.** 583. 477

Five sheep were dosed with 10 g. of mineral lick per day and were compared with five undosed sheep. The former ate an average of 4·7 g. of lick per day voluntarily as against 3·8 g. eaten by the second group throughout the experiment. C. concluded that animals do not need the lick they eat for bodily requirements, but eat it because they like it.—W. H. BISHOP.

CUTHBERTSON, W. F. J., FREE, A. A. & THORNTON, D. M. (1950.) **Distribution of radioactive cobalt in the rat.**—*Brit. J. Nutrit.* **4.** [Authors' summary copied *verbatim.*] 478

The metabolism of dietary ^{60}Co was studied in the rat. The amounts used were of the order met in normal or cobalt-low diets, i.e. about 0·01–0·06 p.p.m. cobalt. When labelled cobalt was administered over this range the retention during the first 14-day period on the diet was 5–7% of the total intake. The concentration of labelled cobalt in the organs of rats maintained on low cobalt diets and given small amounts of labelled cobalt (^{60}Co) was studied over periods from 14 to 90 days on the experimental diets. Higher concentrations were found in the liver, kidneys, spleen and pancreas than in the other organs studied.

FELL, H. B. & MELLANBY, E. M. (1950.) **Effects of hypervitaminosis A on foetal mouse bones cultivated *in vitro*. Preliminary communication.**—*Brit. med. J.* Sept. 2nd. 535-538. [Authors' summary copied *verbatim.*] 479

Long bones from late mouse foetuses were cultivated by the watch-glass method in medium containing abnormally high concentrations of vitamin A.

When pure vitamin-A acetate was added to the culture medium in concentrations of 1,000–3,000 i.u. per 100 ml. the matrix of the terminal

cartilage softened, shrank, and finally almost or completely disappeared, though the cartilage cells appeared normal; in the shaft the cartilage was rapidly replaced by marrow tissue; the bone was resorbed, sometimes completely; the soft tissue surrounding the explant grew as vigorously as in the controls cultivated in normal medium.

The same results were produced by similar concentrations of an alcoholic extract of avoleum, a commercial preparation rich in vitamin A, made from liver.

Similar concentrations of vitamin A obtained by using plasma from fowls fed on a diet rich in the vitamin had a much less drastic effect on the explants.

SWENSON, M. J. (1950.) **The effect of a thiamine analogue on the histopathology of rat tissues.**—*Amer. J. vet. Res.* **11.** 105-114. **480**

A histopathological study of the effects of a thiamine analogue (*o*-aminobenzyl-(3)-4-methyl - 5-β - hydroxyethylthiazolium chloride hydrochloride) on the tissues of rats, fed diets deficient in or free from thiamine. Various lesions were observed such as demyelination of peripheral nerves and spinal cord, fatty changes in the liver and kidneys and degenerative changes in the skeletal muscles. Many of these lesions were found both in the rats receiving the analogue and in the control animals. It was also found that even in rats receiving adequate daily supplements of thiamine, fatty change in the liver and demyelination were present. It was concluded that the addition of the analogue to thiamine-free or deficient diets produces no additional histopathological changes at the level of administration employed (1 mg. per day).

—H. PLATT.

SKELTON, F. R. (1950.) **Study of B-complex deficiency as a non-specific stress.**—*Amer. J. Physiol.* 161. 515-521. [Author's summary and conclusions copied *verbatim*.] **481**

Deficiency of vitamin - B - complex was studied in the rat and the changes observed were related to the general-adaptation-syndrome. The effect of high- and low-protein diets on the changes found in B-complex deficiency was also investigated. It was found that the deficiency caused greater adrenal hypertophy and thymus atrophy than that resulting from an equal degree of inanition. While chronic inanition controls showed renal atrophy, B-complex-deficient rats evidence marked renal hypertrophy. An explanation of this finding is proposed. Primary and secondary sex organ development was arrested in animals submitted to both B-complex deficiency and chronic starvation. It is suggested that in chronic stress there is a disproportionate failure of gonadotrophin production, LH production being reduced before that of FSH. Diets of 10% and 30% protein had only slight influence on the development of the B-complex deficiency. However, the adrenal ascorbic acid was found to be maintained at a normal level on the high-protein diet in contrast to a markedly decreased level on the low-protein intake. B-complex deficiency acts as a prolonged non-specific stress and many of the changes observed can be interpreted on that basis.

COUCH, J. R. & GERMAN, H. L. (1950.) **Pteroylglutamic acid studies with the mature fowl.**—*Poult. Sci.* **29.** 439-544. [Authors' summary copied *verbatim*.] **482**

The egg production of hens fed a low PGA [pteroylglutamic acid] diet (20μg./kg. diet) did not appear to be affected although the hatchability decreased to zero at the end of the sixth week. Eggs from hens fed 220 to 420μg. PGA per kg. of diet with sucrose as the source of carbohydrate hatched although the PGA carry over to the chick, as determined by the content of the vitamin in the yolk, was decreased. When the sucrose diet was fed, 820μg. of folic acid per kg. of diet were required for highest hatchability and to obtain egg yolks that contained as much PGA as did those that were fed a practical all-mash diet. The correlation between the percent hatchability and the PGA content of the egg yolk was not high but hatchability of the eggs did increase proportionally as the amount of PGA in the eggs increased. Evidence is presented which indicates that PGA synthesis in the intestinal tract of the fowl is favored by diets containing starch as a carbohydrate.

NELSON, M. M. & EVANS, H. M. (1949.) **Pteroylglutamic acid and reproduction in the rat.**—*J. Nutrit.* **38.** 11-24. **483**

Reproduction in rats is impaired on a purified diet lacking pteroylglutamic acid and supplemented with succinyl-sulphathiazole. With pair fed controls given pteroylglutamic acid supplements normal reproduction occurred. The effect of deficiency is maximal after about two months but feeding a chemical antagonist to pteroylglutamic acid causes 100% resorption even without a preliminary period of deprivation.—P. H. HERBERT.

SCHULTZE, M. O. (1949.) **Nutritional value of plant materials. II. Prevention of acute uremia of the newborn rat by vitamin B_{12}.**—*Proc. Soc. exp. Biol., N.Y.* **72.** 613-616. [Author's summary copied *verbatim*.] **484**

Acute uremia of the newborn rat observed

on rations in which a commercial soybean protein and DL-methionine furnish the only source of amino acids can be prevented by subcutaneous administration of 0·05μg of vitamin B_{12} shortly after birth.

SEEKLES, L. & VAN ASPEREN, K. (1949.) De cholinesterase-activiteit bij grastetanie en paresis puerperalis. **[Cholinesterase activity in grass tetany and puerperal paresis.]**—*Tijdschr. Diergeneesk.* **74.** 191-214. [English summary.] **485**

In order to determine whether the nervous and muscular excitability seen in grass tetany and milk fever could be ascribed to a disturbance of cholinesterase activity, enzyme determinations were carried out with material from cattle and horses. It was found that calcium activates horse serum cholinesterase but the results with cattle were inconclusive, no striking difference being observed between cholinesterase values in normal cattle and those in cattle with grass tetany or milk fever; nor could a correlation be established between the total Ca and Mg values and the Ca/Mg ratio of cattle serum and cholinesterase activity. It was found that only the blood cells of cattle contain the specific cholinesterase.—J. A. NICHOLSON.

LESBOUYRIES, G. & CHARTON, A. (1950.) Acétose des ruminants. **[Ketosis in ruminant animals.]** *Rec. Mét. vét.* **126.** 65-91. **486**

A review in which biochemical and clinical factors are considered in detail.

—P. H. HERBERT.

MESCHINI, S. (1948.) Una seducente ipotesi sulla patogenesi del collasso puerperale delle bovine. **[An attractive hypothesis on the pathogenesis of milk fever in cows.]**—*Nuova Vet.* **24.** 313-315. **487**

The calcium content of the blood neutralizes the effect of Mg. on the nervous system. In pregnancy and parturition this Ca content is reduced and, if it falls sufficiently to allow a large surplus of unneutralized Mg. to accumulate, puerperal collapse will occur. This is more likely to occur in heavy milking cows, as 1·5 l. of colostrum contains as much calcium as the whole of the blood. M. considers that the withdrawal of Ca from the blood into the milk is brought about by a hormone in the anterior pituitary, and excess of this hormone therefore causes collapse. Good feeding will increase the output of this hormone and therefore tend to increase the risk of puerperal collapse.

—R. MACGREGOR.

CARTWRIGHT, G. E., PALMER, J. G., HITCHINGS, G. H., ELION, G. B., GUNN, F. D. & WINTROBE, M. M. (1950.) **Studies of the effect of 2, 6-diaminopurine on the blood and bone marrow of swine.**—*J. Lab. clin. Med.* **35.** 518-527. [Authors' summary copied *verbatim*.] **488**

The administration of 2, 6-diaminopurine to pigs in amounts of 15 mg. per kilogram of body weight per day by mouth for 53 days failed to retard growth or impair the health of the animals. In doses of 25 to 40 mg. the drug caused complete cessation of growth and death of the animals in about 14 days. The administration of 50 mg. per kilogram of body weight daily resulted in death in about seven days.

The hematologic manifestations consisted of a normocytic, normochromic anemia, slight reticulocytosis, moderate leucopenia and hyperbilirubinemia. Differential cell counts on the bone marrows revealed a marked decrease in the proportion of erythroid cells, a slight decrease in myeloid cells, and a marked increase in the proportion of lymphoid cells. Megaloblasts were not observed. Pathologically there was marked bone marrow hypoplasia, fatty infiltration of the liver, and lymphocytic infiltration and edema of the mucosa and submucosa of the stomach. The hematologic manifestations differed significantly from those observed in pteroylglutamic acid-deficient swine and it is concluded that in swine the metabolic abnormality produced by 2, 6-diaminopurine differs from that produced by the crude methylfolic acid antagonist.

See also abstr. **309** (tubercle bacilli and vitamin analogues); **368** (vitamin D and swine influenza; **493** (dietetic gastro-enteritis in chinchillas); **496** (metabolic bone disease); **620** (report, Gt. Britain); **623** (report, Eire).

DISEASES, GENERAL

XALABARDER, C. (1949.) **What is atelectasis?** *Tubercle, Lond.* **30.** 266-283. **489**

Bronchial obstruction is not the only factor in the production of atelectasis. The existence of bronchial plugs is by no means constant. Arguments are discussed supporting reflex active contraction of lung parenchyma as the direct cause of atelectasis. This may start in the abdominal nervous plexuses, the walls of of a major bronchus, the subpleural space, or in the lung itself. Atelectasis is described as the abnormal exaggeration of the physiological pulmonary tone.—W. R. BETT.

STIRNIMANN, J. (1949.) Aus der Praxis der Aufzuchtkrankheiten der Ferkel. **[Diseases of piglets.]**—*Schweiz. Arch. Tierheilk.* **91.** 556-564. 490

A general note. Details are given of illnesses in 23 piglets, new-born and up to two months old, covering diarrhoea, a type of eczema, pneumonia and paralysis. An unspecified sulphonamide and an organic iodine preparation were used in treatment.—ROY MACK.

KINGSTON, J. S. (1948.) **A peculiar form of equine paralysis.**—*J. R. Army vet. Cps.* **19.** 43-45. 491

Outbreaks of a paralytic condition are described which occurred in a transit camp in Assam and also in Burma during 1942. Of the animals passing through the camp, 79 mules and two horses were affected 3–4 days after arrival and while there was an 80% recovery rate in the mules, both horses died. The early excitement followed by fore and hind limb paralysis was thought to suggest equine encephalomyelitis, but histologically, although nerve cell destruction in brain and spinal cord was seen, there was no definite evidence of a neurotropic virus infecton. The possibility of azoturia was excluded. Treatment was on general lines and included measures to overcome the persistent constipation.—K. G. TOWERS.

LENTZ, W. J. (1948.) **Canine heart diseases.** *Vet. Ext. Quart. Univ. Pa.* **48.** 7-17. 492

Although individual case records are not given, the paper appears to be based upon extensive original observations. The difficulties of diagnosis in small-animal practice, as compared with human medicine, are indicated. In small animals it is difficult to investigate the sound generated by a particular valve because the cardiac valves are grouped together within a very small area. The cardiac impulse can be felt in the majority of healthy animals as a circumscribed systolic thrust, causing the left ventricular wall to come into contact with the chest wall. It can best be ascertained when the flat of the hand is held over the cardiac region, usually at a point corresponding to the fifth intercostal space. Normally it should not occupy an area greater than one-half a square inch. Cardiac hypertrophy and dilatation both produce an increase in the area of the impulse, but in the former case the thrust is heaving and powerful, whereas in the latter it is weak and diffuse. Percussion is of doubtful diagnostic value in small animals, except perhaps in hydropericardium. Radiological examination is, however, often of considerable value in the diagnosis of such conditions as cardioptosis, hypertrophy, dilatation, hydropericardium and adhesions.

Notes are given on the clinical pathology of a number of cardiac conditions, and on treatment. It is stated that fat dogs frequently present clinical evidence of heart weakness. In some cases this is due to fatty degeneration of the muscle fibres of the myocardium, but in many it results from an increased deposition of subpericardial fat, *i.e.* a "fat laden heart", when the prognosis is much less grave.

—ALASTAIR N. WORDEN.

SCHOFIELD, F. W. & SCOLLARD, N. D. (1947.) **An extensive outbreak of acute gastro-enteritis among chinchilla.**—*N. Amer. Vet.* **28.** 756, 758 & 760. 493

This outbreak was probably dietetic in origin, as a result of deficiencies and lack of fresh green food. Bacteriological examinations were made but did not yield evidence of any specific infection.—ROY MACK.

GODARD, J. (1948.) Lithiase urinaire du mouton. **[Urinary calculi in the sheep.]** *Thesis. Alfort.* pp. 77. 494

A review of the literature with brief reports on five cases, on one of which cystotomy was performed.—ROY MACK.

EJRUP, B. (1948.) **Tonoscillography after exercise. A new method of early diagnosis of organic arterial disease leading to intermittent claudication and for differential diagnosis of organic and functional arterial diseases with a special type of apparatus adapted to this purpose.**—*Acta med. scand.* suppl. no. 211. pp. 285. [In English.] 495

While oscillography at rest has been used as a clinical method of investigation for many years, oscillography after exercise is not employed as a routine method. An account is given of the results obtained in 77 normal people and in 660 patients with arterial disease. The method is useful in the early diagnosis of organic vascular disturbances in the large arteries of the extremities, and in the diagnostic differentiation of organic obstruction in the great vessels and functional vasomotor conditions. The apparatus consists of an automatic, oscillographic blood-pressure recorder, adapted for recording calibrated oscillograms with ink at half-minute intervals.—W. R. BETT.

ALBRIGHT, F. [A.B., M.D., Associate Professor of Medicine, Harvard Medical School, Boston, Mass.] & REIFENSTEIN, E. C. [A.B., M.D., F.A.C.P., Consultant-in-charge, Department of Clinical Investigation, Sloan-Kettering In-

stitute of Cancer Research, Memorial Hospital Cancer Center, New York]. (1948.) **The Parathyriod Glands and Metabolic Bone Disease.** pp. xxvi+393. Baltimore: Waverley Press, Inc. 496

For more than 20 years, Albright and his colleagues have been studying the biochemical abnormalities of metabolic bone diseases in man, and the clinical phenomena related to them. They have published many papers in that period and now present an outline of their experiences and theories in this well-produced book.

The phenomena presented by bone metabolism in health and in disease are discussed and theories related to those phenomena are examined critically according to their usefulness in interpreting the abnormalities of clinical hypo- and hyper-parathyroidism, the osteomalacias, osteoporosis, fibrous dysplasia and Paget's disease. In addition a short chapter is devoted to a consideration of the action of vitamin D and dihydrotachysterol (A.T. 10).

As pointed out in the authors' foreword, the material considered is selected and the book does not constitute a complete textbook. However, it does succeed admirably in presenting and emphasizing general principles and for this reason, in conjunction with the lucid and easy style of writing it should be of interest to all concerned with medical affections of bone. From a veterinary viewpoint the book contains much information of comparative interest and the biochemical data which are presented may afford useful suggestive information in relation to the aetiology of some of the more obscure bone conditions which affect our domestic animals.—J. Lochiel McGirr.

See also absts. 595 (night blindness in dogs); 623 (report, Eire).

McAllister, W. B., Jr. & Waters, L. L. (1950.) **Vascular lesions in the dog following thyroidectomy and viosterol feeding.**—*Yale J. Biol. Med.* **22.** 651-660. [Authors' summary copied *verbatim.*] 497

Acute arterial and endocardial lesions are produced by feeding toxic quantities of viosterol [a vitamin D preparation.—Ed. *V.B.*] to thyroidectomized dogs. Their distribution and pathogenesis are described. These lesions are anatomically similar to those occurring in dogs with experimental renal disease. Their distribution in the aorta corresponds to that of early human arteriosclerosis. Especially after prolonged hyperlipemia, lipid is deposited in the intima of the affected coronary arteries selectively at the sites of lesions. Finally, a practical experimental method is described for producing in dogs arterial lesions that allow the study of the deposition and transport of lipid. This can be approached from the standpoint of the morphology of the vessel wall and by the physical and chemical composition of the blood.

POISONS AND POISONING

Gunderson, H. (1950.) **The effect on domestic animals of insecticides and weed killers.**—*Iowa Vet.* **21.** No. 4. pp. 7-11, 22 & 24. 498

The uses and toxic properties of insecticides and weed killers in current use are described, and a table of comparative toxicities is given.—Roy Mack.

Franklin, M., Bean, W. B. & Hardin, R. C. (1950.) **Fowler's solution as an etiologic agent in cirrhosis.**—*Amer. J. med. Sci.* **219.** 589-596. [Authors' summary copied *verbatim.*] 499

The occurrence of portal cirrhosis and ascites following chronic arsenic poisoning due to prolonged administration of Fowler's solution (potassium arsenite) is discussed. The literature is reviewed briefly and three cases of arsenic cirrhosis are presented. The hepatotoxic action of arsenic is discussed and the potential dangers to liver of prolonged administration of Fowler's solution is pointed out.

Westphal, A. (1949.) Über die Möglichkeit der Existenz und des serologischen Nachweises von Toxodesminen. **[Serological demonstration of toxic insoluble enzymes.]**—*Zbl. Bakt.* (1. *Orig.* **153.** 51-75. [English, French, German, and Russian summaries, abst. from summaries.] 500

In persons with infectious diseases W. states that if 0·1 ml. of serum is diluted with 2·5 ml. of a 0·5% phenol solution, a protein precipitate unstable to heat and sodium citrate appears within 45 min. This protein substance is not bactericidal, but if it is not formed the course of the infectious disease may end fatally. W. considers that the protein has a special affinity for toxic substances in the organism and acts like an insoluble catalyst or desmo-enzyme.—E.M.J.

Heathcote, J. G. (1949.) **Toxic effect of the crystals from 'agenized' zein on certain acid-producing bacteria.** [Correspondence.]—*Nature, Lond.* **164.** 439. 501

The crystalline material obtained from agenized zein [see *V.B.* **20.** 306] was found to be markedly toxic to *Leuconostoc mesenteroides P*-60 at a concentration of 5 μg. per ml. of liquid medium and at 50μg. per ml. growth and acid-production were almost entirely suppressed. Preliminary tests on several other organisms are mentioned.—E.M.J.

BENTLEY, H. R., MCDERMOTT, E. E., PACE, J., WHITEHEAD, J. K. & MORAN, T. (1950.) **Toxic factor from 'agenized' proteins: methionine as the essential reactant.** [Correspondence.]—*Nature, Lond.* **165.** 150-151. **502**

A crystalline substance [see *V.B.* **20.** 306.] of empirical formula $C_5H_{12}N_2SO_3$, isolated from "agenized" zein, was capable of inducing convulsive fits in rabbits [see *V.B.* **19.** 622.] and in one dog (no more material available). From the crystals a degradation product α-amino-n-butyric acid was obtained with a m.p. similar to that of an authentic specimen derived from DL methionine. Assuming that the toxic factor is produced by reaction between nitrogen trichloride and a known sulphur-containing amino acid residue in the protein the isolation of α-amino-n-butyric acid clearly implicates methionine as the reactive centre.—E. EDEN.

MAGEE, H. E. (1950.) **Agenised flour; The toxic factor**—*Mon. Bull. Min. Hlth publ. Hlth Lab. Serv.* **9.** 205-207. **503**

M. [see also *V.B.* **19.** 622.] discussed the position in regard to the use of improvers for flour mentioning the prohibition from 1st August, 1949, of the use of nitrogen trichloride by the Government of the United States, and the decision to use chlorine dioxide instead, as soon as the mills could be equipped with the required generating apparatus. The process consists of passing chlorine mixed with air into a solution of sodium chlorite so that a mixture of 6% chlorine dioxide in air can be passed into a stream of flour.

Moran *et al.* (1948) found that dogs were unaffected by eating for three months flour treated with chlorine dioxide at 12 times the usual commercial dosage. [See also Radomski *et al. V.B.* **19.** 621.] In tests on healthy human volunteers no ill effects were observed over a period of six months.

The author discussed the toxic factor produced (a) by the action of agene on flour [see Mellanby *V.B.* **17.** 33 and **18.** 375; see also Moran *V.B.* **18.** 375] indicating its association with the protein in the flour; (b) by the action of agene on other proteins (casein, zein, etc.) and particularly on proteins containing amino acids relatively rich in methionine. The toxic factor was isolated from treated zein as a crystalline substance and was found to have a methionine basis. The formula was determined and discussed.—E.M.J.

SCHAUSER, W. (1950.) Ein Fall von Phenothiazinvergiftung bei einer Ziege. **[Phenothiazine poisoning in a goat.]**—*Dtsch. tierärztl. Wschr.* **57.** 106-107. **504**

S. treated a pregnant goat with phenothiazine in dosage recommended by Wolfanger (1948), 25 g. in the evening and the same amount the next morning, although the animal was ill at the time of the second dose. It died several hours later.—J.E.

SLOAN, J. E. N. (1950.) **Carbon tetrachloride dosage in sheep. Some observations on possible chronic toxicity.** *Vet. Rec.* **62.** 380-381. [Author's summary slightly amended.] **505**

An account is given of an experiment designed to show whether therapeutic doses of carbon tetrachloride administered at monthly intervals to sheep for periods of up to nine months, would prove toxic. No toxic effects were noted.

FITZHUGH, O. G., NELSON, A. A. & FRAWLEY, J. P. (1950.) **The chronic toxicities of technical benzene hexachloride and its alpha, beta and gamma isomers.**—*J. Pharmacol.* **100.** 59-66. [Abst. from authors' summary.] **506**

A study was made on 420 rats fed for a lifetime diets containing the technical benzene hexachloride or the alpha, beta or gamma isomer in dosage levels ranging from 5 to 1600 p.p.m., details of which are given.

In comparison with previous chronic experiments with DDT this experiment indicates that the gamma isomer of benzene hexachloride is about a fourth as toxic as DDT, the beta isomer is two to three times as toxic, and the alpha isomer and the technical benzene hexachloride are of the same order of chronic toxicity as DDT.

BLACK, D. J. G., GETTY, J., JAMESON, H. R. & PIRIE, H. (1950.) **The effect of continuous ingestion by poultry of benzene hexachloride.**—*Brit. vet. J.* **106.** 386-391. [Abst. from authors' summary.] **507**

Crude BHC (benzene hexachloride) and 90% γ BHC are commercially available, and are likely to be used in the protection of cereal feeding-stuffs from insect attack. These chemicals were added at varying levels to the diet of laying hens to determine whether, if used in this way, they would taint the eggs or poultry flesh.

After continuous ingestion for six and a half months of amounts up to 84 ppm. crude BHC in the feed, equivalent to an intake of about 10 mg. BHC per hen per day, no taint was discernible in the flesh or fat of the birds after cooking. In a test in which eggs were boiled under normal domestic conditions taint was just discernible at feeding levels of 8 ppm. crude BHC. A later test indicated that continuous feeding of 1 ppm. γ BHC was close to the threshold of significant taint. Continuous feeding of 42 and 84 ppm crude BHC resulted in appreciable quantities of BHC appearing in the eggs. In no case were significant differences observed between control and treated groups in respect of egg production, live weight, food and water consumption, and no changes were found on P.M. examination.

McDougall, W. A. (1949.) **The rat poisons, sodium fluoroacetate and "Castrix".**—*Qd. J. agric. Sci.* **6.** 54-60. [Part of author's summary; slightly modified.] **508**

The rat poisons, sodium fluoroacetate ("1080") and "Castrix" [2-chloro-4-dimethylamino-6-methylpyrimidine], were tested against *Rattus conatus* and *Melomys littoralis* in cages, and against *R. conatus* in settled field populations. Feeding tests show that L.D.50 for *R. conatus* and *M. littoralis* respectively are: sodium fluoroacetate, 1·42 mg./kg., 2·23 mg./kg., "Castrix", 4·46 mg./kg., 5·62 mg./kg. An intake-Toxicity-Factor of 3·5 is obtained at a poison strength of 1:1,000 with "1080" and at 1:250 with "Castrix". Both these white powders, which can be used with grain, are technically good rat poisons. There are strong indications that the general use of "Castrix" would be more dangerous than that of sodium fluoroacetate.

Allen, D. R. (1948.) **Laburnum poisoning in cattle.**—*Vet. Rec.* **60.** 586. **509**

Three heifers, which were afterwards found to have ingested branches of laburnum, became ill; they had abdominal pain, salivation, hypersensitivity and unusual gait with knuckled over fetlocks. Magnesium sulphate, istin (1, 8-aneously dioxyanthraquinone), ginger "rephrin" sub-cut and omnadin (a German preparation containing albumin and lipoids) were given. One animal died the same day, the other two recovered slowly, although knuckling over of the fetlocks was still evident in one heifer after seven months; these two calved normally two and four months after the poisoning.

—R. Marshall.

Kenny, G. C., Everist, S. L. & Sutherland, A. K. (1950.) **Noogoora burr poisoning of cattle.**—*Qd. agric. J.* **70.** 172-177. **510**

Noogoora burr (*Xanthium pungens*) is a serious weed pest in Queensland and its seedlings have frequently caused heavy losses among cattle; recent outbreaks of poisoning are described. Particulars of the plant are given including its mode of germination and growth. The toxic principle (possibly a glucoside) is found in the cotyledons of the burr. It is rapid in action and affects particularly the intestines, liver and heart, causing marked abdominal pain, widespread muscular spasms and hyperesthesia with death usually within 12 hours. The symptoms, course and P.M. findings are described. No specific treatment can be recommended as yet. The affected herd must be removed from the paddocks containing the burr seedlings but can be returned safely in a few weeks when these have matured. A note on experimental and naturally occurring cases in pigs is included.—J. M. Keep.

Boué, A. (1949.) Etude de la toxicité d'une composée saharienne, Perralderia coronopifolia Cosson et ses variétés, pour les animaux. **[Toxicity of *Perralderia coronopifolia* for animals.]**—*Arch. Inst. Pasteur Algér.* **27.** 322-333. **511**

The extreme toxicity of the Sahara plant *Perralderia coronopifolia* for camels and small ruminants is believed to be due to its content of hydrocyanic acid. Immediate treatment with purgatives and stimulants is sometimes effective in camels.—Nesta Dean.

Coop, I. E. & Blakley, R. L. (1950.) **The metabolism and toxicity of cyanides and cyanogenetic glucosides in sheep. I. Activity in the rumen.**—*N.Z. J. Sci. Tech.* **30.** 277-291. [Authors' summary copied *verbatim.*] **512**

A sheep with permanent rumen fistula has been used to study the production of HCN from cyanogenetic glucosides and cyanogenetic plants in the rumen and the absorption of this HCN from the rumen. Absorption of HCN from the rumen is very rapid. On an average 75% of dosed HCN is absorbed within 15 min. The hydrolysis of free glucoside and of glucoside in plant tissue in the rumen is rapid and can be complete in as short a time as 10–15 min. Hydrolysis in the rumen does not necessitate the presence of plant enzyme since the ruminal bacteria can hydrolyse cyanogenetic glucosides very rapidly. Peak production, concentration and absorption of HCN under most circumstances take place within a few minutes (less

than 10 min.) of dosing free glucoside and within 10–20 min. of sheep eating cyanogenetic plant material. The conditions of the rumen affecting the rates of hydrolysis of glucosides and of absorption of HCN are discussed.

RUEGAMER, W. R. & POLING, C. E. (1950.) **Rat feeding tests with milk obtained from cows fed toxic cottonseed meal.**—*J. Anim. Sci.* **9.** 201-206. [Authors' summary modified.] **513**

A sample of hexane extracted cottonseed meal which was known to be toxic to male weanling rats, was fed to two cows for a period of one week. The milk collected from these cows was fed to weanling male rats to determine whether significant amounts of the toxic substances occurring in the cottonseed meal had been transmitted into the milk. Feeding the milk as an exclusive diet to weanling rats for a period of eight weeks failed to reveal any indication of toxicity. Milk containing a very low level of the toxic constituents was, however, found to be toxic to rats of the same age. Therefore it can be concluded that the toxicity associated with improperly processed cottonseed meal cannot be transmitted into the milk of the dairy cow which has been fed the toxic meal. This does not preclude the possibility that yet other factors may be transmitted into the milk which might provoke an allergic reaction particularly in human beings consuming the milk.

See also absts. **620** (report, Gt. Britain); **623** (report, Eire).

PHARMACOLOGY AND GENERAL THERAPEUTICS

(For treatment of specific infections see under the appropriate disease)

HOLMAN, H. H. (1949.) **Blood transfusion in animals: its theory and practice. Discussion by the Central Veterinary Society.**—*Vet. Rec.* **61.** 552-554. **514**
[See also HOLMES, *V.B.* **21.** 39.]

Two important syndromes which may benefit from blood transfusion are anaemia and shock. In anaemia the cells are reduced to a greater degree than the circulating fluid and transfusion assists in restoring both the oxygen-carrying capacity and blood volume. In shock some degree of stasis ensues from a diversion of blood from normal circulatory paths to the affected area or other reservoirs. This is effected by capillary dilatation in the static areas. The anoxia thus experienced elsewhere may cause further dilation, so withdrawing more blood from essential areas. In this condition the transfusion of plasma may prove as effective as that of whole blood.

—G. FULTON ROBERTS.

MOSKEY, H. E. (1948.) **Commercial poultry remedies.**—*Proc. 20th Ann. Meet. N.E. Conf. Lab. Wkrs Pullorum Dis. Contr.*, June 8th, 9th & 10th. pp. 58-64. [Mimeographed.] **515**

The legal aspects of labelling and advertising remedies for diseases in poultry were discussed. Before permission is given to sell any in the USA evidence has to be produced that they are beneficial to poultry and harmless to human beings who might use the birds for food. The administration of various so-called tonics to poultry and the supplementation of their drinking water with quaternary ammonium salts had so far not been proved to be effective against coccidiosis. Solutions of copper sulphate were also unsatisfactory against infections with *Monilia albicans*.—E. EDEN.

TENNANT, R., ADELSON, L., MCADAMS, G. & DAVIE, R. (1950.) **The use of blood volume studies as a clinical aid in intravenous therapy.**—*Yale J. Biol. Med.* **22.** 735-745. [Authors' summary and conclusions copied *verbatim*.] **516**

Blood volume determinations are a valuable aid in the diagnosis and treatment of a variety of diseases, prominent among which are acute and chronic blood loss, dehydration, shock from whatever cause, malignancy with wasting, and chronic wound infections.

The Evans Blue method, as a clinical procedure, has proved practical for the average hospital. Each laboratory should set up its own series of normal values for plasma volume, red blood cell volume, total blood volume, and quantity of plasma protein, and these normals should be used for the determination of deficits or excesses in patients.

I. & II. WEIDMANN, H. (1948.) Untersuchungen über Natrium- und Magnesium-Methylaminoantipyrinmethansulfonat (Novaminsulfon; Magnopyrol). III. Über die Wirkung des Magnesium-Methylaminoantipyrinmethansulfonat (Magnopyrol) und seiner Komponenten Dimethylaminoantipyrin und Magnesium am isolierten Uterus des Meerschweinchens. IV. Die Wirkung von Magnesium-Methylaminoantipyrinmethansulfonat (Magnopyrol) auf den Dünndarm des Kaninchens in situ. **[Research on sodium and magnesium-methylaminoantipyrinemethane sulphonate (novaminsulfon; magnopyrol). III. The action of**

magnesium methylaminoantipyrinemethane sulphonate (magnopyrol) on uterine muscle of g. pigs. IV. The action of magnesium-methylaminoantipyrinemethane sulphonate (magnopyrol) on the small intestine in the rabbits in situ.]—*Schweiz. Arch. Tierheilk.* **90.** 319-323; & 594-600. [French summary; French and German summaries.] **517**

I. Previous work on isolated horse colon and uterus of the cow indicated that the magnesium salts of methylaminoantipyrinemethane sulphonate (magnopyrol) was more efficient in diminishing muscle tonus than the sodium salt of the same compound.

In order to determine which part of magnopyrol was physiologically active, magnopyrol, magnesium chloride and dimethylaminoantipyrine were tested on isolated uterine muscle of g. pigs. It was found that dimethylaminoantipyrine was more active than its magnesium salt.

II. As the magnesium salt is less toxic than its parent compound it was used in preference for further studies on isolated small intestine of rabbits. The larger the dose, the greater was the effect observed. W. recommends the use of doses larger than customary when treating farm animals with antipyrine derivatives against intestinal spasms.—E EDEN.

WAKSMAN, S. A. [Ph.D. New Jersey Agricultural Experiment Station, Rutgers University.] [Edited by.] (1949.) **Streptomycin. Nature and practical applications.** pp. ix+618. London: Baillière, Tindall & Cox. 76s. 6d. **518**

This book gives, in 46 chapters, a review of the available information on streptomycin. Its most striking characteristic is its completeness, and there is an addendum with an allusion to some more infectious diseases that have been treated with streptomycin. The book is divided into four sections, the first two dealing with the nature and the properties of streptomycin, the third with its uses in the treatment of human diseases, and the fourth with its use in veterinary medicine and agriculture.

The chapters dealing with veterinary medicine comprise its use in small animal medicine, in infections of the bovine mammary gland, and the control of bacteria in bovine semen. As, in contrast to penicillin, streptomycin does not deteriorate quickly, it makes storage of semen possible. Up to 1,000 units per ml. do not affect the motility of the spermatozoa, whereas bacterial contaminants are effectively controlled by 250 units per ml. One chapter is devoted to the use of streptomycin for the isolation of viruses by means of control of concomitant bacteria.

The story of streptomycin is a tale of wonders and the two introductory chapters by Waksman lead one to expect that great things are to come. The level of all the chapters is very high, even if not equally so. Factual mistakes are almost non-existent. There is one in chapter 8, p. 122; *R. mooseri* is the cause of endemic, not epidemic, typhus, as stated, and the reverse holds for *R. prowazeki*. The same chapter contains a reference to the action of streptomycin on bacteriophages which really requires not just a word in passing but a description of the experimental conditions in which such an action has been found to exist. It is quite difficult to distinguish action on the bacteriophage from the action on its bacterial host. Streptomycin is known not to attack any of the smaller viruses to which bacteriophages belong.

There are hardly any factually contradictory statements in the various chapters. Contradictory opinions, however, are present, and the matter to which one of them relates is very important. Whereas most authors advocate the use of combinations of drugs—a whole chapter is devoted to synergism of drugs—there is one powerful voice against this method (chapter 41), the argument being that indiscriminate use of one drug is bad enough, but use of combinations would lead to the multiple bad effects, *i.e.* the production of more drug-resistant organisms of all sorts, and more people sensitized against more drugs.

The production of streptomycin is discussed, its mode of action and substances which are antagonistic. There are helpful tables and figures throughout the book; there is also a critical discussion of the use of streptomycin in TB. The book should be of great value to all workers engaged in this field.

—A. MAYR-HARTING.

WHITEHILL, A. R., OLESON, J. J. & HUTCHINGS, B. L. (1950.) **Stimulatory effect of aureomycin on the growth of chicks.**—*Proc. Soc. exp. Biol., N.Y.* **74.** 11-13. [Authors' summary copied *verbatim*.] **519**

Aureomycin hydrochloride stimulates the growth of chicks when fed in the diet at levels as low as 25 mg. per kilo. This effect is presumed to be an indirect one since certain other antibiotics manifest this same property. The relationship of this phenomenon to proposed new APF [animal protein factor] factors in certain natural materials is discussed.

WARTH, P. T., CHANDLER, C. A. & BLISS, E. A. (1950.) **The antibacterial action of neomycin and furadroxyl *in vitro* and *in vivo*.**—*Johns Hopk. Hosp. Bull.* **86.** 169-178. [Authors' summary slightly modified.] **520**

Furadroxyl was, in general, more effective against gram positive than gram negative bacteria but against all bacteria it was less active *in vitro* than aureomycin. In therapeutic trials in mice it was less effective than sulfadiazine.

Neomycin was as effective as aureomycin, *in vitro*, against gram negative bacilli of the coli-aerogenes group, *H. influenzae* staphylococci: and gram positive bacilli. It was the more effective of the two against strains of *Proteus* and *Pseudomonas*, in fact it is the only antibiotic studied by the authors that is potent for both of these organisms. Neomycin was less active than aureomycin in inhibiting the growth of streptococci. *In vivo*, it gave better protection than aureomycin to mice infected with *K. pneumoniae* and was as effective as aureomycin in the therapy of *H. influenzae* infections. In infections with the haemolytic streptococcus and the pneumococcus, however, neomycin was valueless.

ANIGSTEIN, L., WHITNEY, D. M. & MICKS, D. W. (1950.) **Antibacterial activity of a substance present in ticks (Ixodoidea) of Texas.**—*Nature, Lond.* **166.** 141-143. **521**

Five species of ticks were investigated in search of possible antibacterial properties. Complete or partial inhibition of growth of *Bacillus subtilis* was obtained from an extract of whole unfed *Amblyomma americanum*. Similar results were found with *A. cajannense*, *Ornithodoros turicata* and *Argas persicus*, especially when engorged. The antibacterial substance remained active for several months when dried, but was destroyed by heat at pH 5·7 or lower. It was assumed to be a proteolytic product. The factor was enhanced by ingested mammalian blood and it is suggested that the hydrolysis of blood proteins, though inimical to bacteria, creates suitable conditions for rickettsia. This may be the explanation of the reactivation of spotted fever rickettsia encountered in the field.—JAS. G. O'SULLIVAN.

ŠTERZL, J. & KŘECEK, J. (1949.) **Competitive inhibition by histamine and thiamine of the metabolic influence of antihistamines on bacteria.** [Correspondence.]—*Nature, Lond.* **164.** 700-701. **522**

Experiments with bacteria capable of using histidine as their only carbon source indicate that the antihistamine drugs have an inhibitory effect on the growth rate. In the presence of glucose as energy source this inhibition can be reversed by the addition of histamine or thiamine. It is suggested that the growth inhibiting effect of antihistamines may be caused by the blocking of more than one enzyme and also that histamine, like thiamine, may be a coenzyme for glucose catabolism.

—P. H. HERBERT.

BIGGER, J. W. & WARE, G. C. (1950.) **Potentiation of sulphonamide by "L substance".**—*Lancet.* **259.** 427-433. [Authors' summary copied *verbatim*.] **523**

The sensitivity of a bacterium to sulphonamide is grossly underrated when ordinary culture media are used. Treatment of such media by the method of Harper and Cawston increases the apparent sensitivity of the bacterium to sulphonamides, but only to a limited extent. *Bacterium coli*, which grows well in a simple synthetic medium, is much more sensitive to sulphonamides in a synthetic medium than it is in media treated by the method of Harper and Cawston. An improved synthetic medium is described.

The action of sulphathiazole on *Bact. coli* in synthetic medium is bacteriofrenic rather than bacteriostatic or bactericidal. The addition of a small amount (1:20,000) of lemco to synthetic medium potentiates sulphathiazole so that its action is bactericidal. The substance responsible for the potentiating action of lemco is present in meat extracts, serum, red blood-cells, urine, and yeast.

The provisional name, L substance, has been given to this constituent of lemco. The L substance, which is basic, has been concentrated and partially purified but not yet identified. Since L substance is present in various body fluids which contain little, if any, sulphonamide-antagonisers, it is suggested that, in the living body, the action of sulphonamides is bactericidal rather than bacteriofrenic or bacteriostatic, and that, to explain their therapeutic effect, it is unnecessary to evoke the "ordinary defence mechanisms" of the body. The L substance is different from the substance in horse red blood-cells which is responsible for the Harper and Cawston effect.

KOLB, R. W. & SCHNEITER, R. (1950.) **The germicidal and sporicidal efficacy of methyl bromide for *Bacillus anthracis*.**—*J. Bact.* **59.** 401-412. **524**

The spores of *B. anthracis* of canine, ovine, bovine and human origin were completely destroyed by methyl bromide in concentrations of 3·4–3·9 g. per l. in the presence of moisture

after exposure for 24–27 hours; after exposure of one hour spores survived in four out of 24 tests made. In the absence of moisture survival was increased, some spores survived in 27 out of 213 tests, but spores subjected to prolonged drying over calcium chloride were found to be no more resistant to the action of methyl bromide than moist non-desiccated spores.

—Nesta Dean.

Rubin, B. A. (1950.) **Relation of amino acids to trypanocidal activity of parasorbic acid.**—*Yale J. Biol. Med.* **22.** 423-428. [Authors' summary copied *verbatim*.] **525**

The mechanism of trypanocidal activity of lactones was sought in metabolic antagonism, using ascorbic acid and calcium pantothenate. Neither of these had any effect, but in testing portions of the pantothenate moiety, β-alanine was found to inhibit the activity of parasorbic acid. Twenty-four amino acids were then tested in lactone-trypanosome systems and found to fall into three, not sharply defined groups—those which potentiated, those which inhibited, and those which had no effect. When an inhibiting and potentiating agent were both added, only the effect of the former was seen. When a lactone inhibitor was incubated with a susceptible organism, the effect of the lactone (added later) was reduced much beyond the expected level.

Spinks, A. (1950.) **Determination of Antrycide.**—*Biochem. J.* **47.** 299-306. [Authors' summary copied *verbatim*.] **526**

Antrycide has been determined by reaction with eosin to give a highly fluorescent salt which can be separated from excess eosin by extraction into a mixture of chloroform and butanol. This method measures down to 40 μg. of Antrycide/l. of plasma with satisfactory accuracy, and 20 μg./l. approximately. The method has a considerable degree of specificity, in that most other tertiary and quaternary bases examined did not react. It can be applied to tissues and urine as well as plasma. A less sensitive method suitable for plasma involves measuring the weak blue fluorescence of Antrycide itself. Two colorimetric methods, suitable only for aqueous solutions, are briefly described.

Mahoney, L. J. & Barrie, H. J. (1950.) **Adrenal insufficiency after suramin treatment of pemphigus.**—*Brit. med. J.* Sept. 16th. 655-656. [Authors' summary copied *verbatim*.] **527**

A case is reported of a woman of 37 who developed pemphigus in pregnancy and died of acute adrenal necrosis five weeks after finishing a course of suramin therapy.

Lightbound, T. (1948.) **Calciferol by intramuscular injection.**—*Lancet.* **255.** 1010-1012. **528**

It was found that intramuscular injections of calciferol were more satisfactory in the treatment of lupus vulgaris than oral administration of the drug. No pigmentation, hypercalcaemia or calcification of the soft tissues was observed. Kidney function was impaired, however, and L. considered that the treatment period should not last longer than four months.

—E. Eden.

I. Bishop, P. M. F., Kennedy, G. C. & Wynn-Williams, G. (1948.) **Potency and "toxicity" of some synthetic oestrogens.**—*Lancet.* **255.** 764-766. **529**

II. Bishop, P. M. F., Richards, N. A. & Smith, D. J. N. (1950.) **Further observations on the potency of oestrogens.**—*Lancet.* **258.** 848-850. [Summaries copied *verbatim*.] **530**

I. A method is described for comparing the potency of oestrogens in man. It consists in giving the oestrogen daily by mouth in 14-day courses to amenorrhoeic women and recording whether oestrogen withdrawal bleeding takes place. The results obtained indicate that dienoestrol is about a quarter, diosynolic acid about a fifth, and hexoestrol about an eighteenth, as potent as stilboestrol. Investigation of the incidence of "toxicity" indicates that stilboestrol is more likely to produce nausea in therapeutic doses than are dienoestrol, doisynolic acid, and hexoestrol. Reasons are given for choosing this end-point, and for the failure to devise any other suitable method of assessment at different levels of oestrogenic response, such as the relief of menopausal symptoms, the production of an oestrous vaginal smear, and the suppression of lactation.

II. A method is described for comparing the potency of oestrogens in the human subject. It consists in giving the oestrogen daily by mouth in 14-day courses to amenorrhoeic women and recording whether oestrogen-withdrawal bleeding takes place.

The results obtained indicate that ethinyl oestradiol is 20–25 times as potent as stilboestrol, and equine conjugated oestrogen half as potent. Few cases of nausea were encountered with ethinyl oestradiol at the therapeutic levels necessary to induce withdrawal bleeding, and only one case of nausea occurred with equine conjugated oestrogen. At higher dosage levels,

however, such as those necessary to produce haemostasis in cases of functional uterine bleeding, "toxic" effects usually developed with ethinyl oestradiol, and in two such patients given equine conjugated oestrogen (a natural oestrogenic product) severe vomiting was caused by high dosage. "Toxicity" does not therefore depend on whether the compound is wholly or partially synthetic or whether it is extracted entirely from natural sources. Reasons are given for choosing this end-point and for the failure to devise any other suitable method of assessment at different levels of oestrogenic response, such as relief of menopausal symptoms, the production of an oestrous vaginal smear, or the suppression of lactation.

COMMON, R. H., KEEFE, T. J. & MAW, W. A. (1950.) **Some biochemical effects of thiouracil on the response of the immature pullet to estrogen.**—*Canad. J. Res.* Sect. D. **28.** 272-279. [Authors' summary copied *verbatim.*] 531

Thiouracil depressed the increases of serum calcium, serum riboflavin, and serum vitamin A evoked by estrogen in the sexually immature pullet. In these respects the effects of thiouracil resembled the effects of thyroxine. In contrast to thyroxine, however, thiouracil increased the hypertrophy of the liver and oviduct induced by estrogen. Estrogen did not significantly increase total liver riboflavin, whereas estrogen plus thiouracil produced a significant increase.

MCDERMOTT, W. V., FRY, E. G., BROBECK, J. R. & LONG, C. N. H. (1950.) **Release of adrenocorticotrophic hormone by direct application of epinephrine to pituitary grafts.**—*Proc. Soc. exp. Biol., N.Y.* **73.** 609-610. [Authors' summary copied *verbatim.*] 532

Homologous grafts of pituitary tissue to the anterior chamber of the eye of the hypophysectomized rat retain the ability to secrete ACTH [adrenocorticotrophic hormone], both spontaneously and in response to activation by epinephrine. The effect of epinephrine in releasing ACTH may be brought about by its direct application to anterior pituitary tissue.

COOP, I. E. & MCLEOD, G. B. (1950.) **Sheep dipping trials with derris, bentonite sulphur, D.D.T., and benzene hexachloride.**—*N.Z. J. Sci. Tech.* **30.** 292-304. [Authors' summary copied *verbatim.*] 533

Dipping trials have been conducted with derris, bentonite-sulphur, D.D.T. and benzene hexachloride against the sheep ked and the sheep louse. Derris has been shown to be very effective against keds but its control of lice has not been satisfactory. Bentonite-sulphur has proved to be unsatisfactory for the control of both keds and lice. D.D.T. has been shown to be capable of controlling keds but, like derris, cannot be relied upon to control lice. The best material tested was benzene hexachloride, which controlled keds with the same efficiency as derris or D.D.T., but in addition, as far as the experiments have gone, has shown promise of controlling lice. The practical limitations and possibilities of the use of these materials in sheep dipping are discussed.

SUN, Y.-P. (1950.) **Toxicity index—an improved method of comparing the relative toxicity of insecticides.**—*J. econ. Ent.* **43.** 45-53. [Author's summary copied *verbatim.*] 534

Toxicity of insecticides expressed in terms of per cent mortality of LD50 may vary greatly in different laboratories and at different seasons of the year, even if the same equipment was used. Toxicity index, which is used here as a relative value to express the toxicity of insecticides, is defined as the ratio between the LD 50 of a standard insecticide and the LD 50 of the test sample, multiplied by 100.

It has been demonstrated experimentally that many factors, which changed the LD 50 values of insecticides tested on house flies, did not appreciably affect their toxicity indexes. The consistency of toxicity index under different testing conditions appears to arise from the fact that the change in the LD 50 of a test sample is accompanied by a proportional change in the LD50 of the standard insecticide The following factors caused no significant changes in the toxicity index of insecticides tested within the limits of the tests described herein: (1) Physical factors.—Volume of spray, wind velocity in the spray tunnel, fineness of spray and spraying pressure; (2) Biological factors.—Criterion of death, length of time between spraying and counting mortality, age of flies, size of flies and mortality of flies in the control.

It has been proved that the toxicity index of one insecticide with respect to a chosen standard can be transferred by simple calculations to a toxicity index based on another standard and that the calculated index is within the variation of one standard deviation of the index obtained by direct determination.

Factors which are known to change the toxicity index of insecticides are species of insects, different methods of applying insect-

icides, and temperature. However, by using a standard having the same composition as the sample, the results of bioassay should remain the same despite the above factors.

See also absts. **295, 299** and **321** (aureomycin); **297** (sulphone and penicillin in mastitis); **298** (antibacterial drugs in mastitis); **310** and **390** (streptomycin); **313** and **550** (penicillin); **320** (chloramphenicol); **323** (brucellosis); **324** (sulphamethazine); **331** (aureomycin and terramycin); **332** and **347** (neoarsphenamine); **339** (antrycide); **340** (naganol); **341** (oral chemoprophylaxis); **343** trichomoniasis); **345** (atebrin); **348** (enheptin-T); **349** and **350** (coccidiosis); **351** (proguanil); **353** (lomidine); **354** (pamaquine); **364** (cow pox); **371** (terramycin); **428** (black widow spider control); **429, 432** and **433** (insecticides); **434** (mange); **438-440** (phenothiazine); **443** (helminths); **444-445** (anthelmintics); **450** (filariasis); **454** and **456** (hormone therapy); **464** (guanine analog); **465** (reticulosis); **504-507** (parasiticides); **563** (bacitracin); **567** (androgen); **587-589** (oestrogen therapy); **626** (book, antibiotics).

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

STONER, H. B. (1950.) **Effect of magnesium on P^{31} and P^{32} partition in muscle.**—*Amer. J. Physiol.* **161.** 387-398. [Author's summary copied *verbatim.*] 535

The effect of Mg^{++} on the distribution of phosphate in the muscle of the rat has been studied with particular reference to ATP [adenosine tri-phosphate] by both chemical and isotopic methods. Magnesium anesthesia does not alter the rate of disappearance of P^{32} from the plasma, but it has a definite effect on the distribution of both P^{31} and P^{32} in the voluntary muscle. Under the influence of Mg^{++} the ATP content of the muscle is increased. This is mainly due to the elimination of muscular conractions during the killing of the animal. That this is not the whole explanation is seen when the magnesium-treated animal is compared with one in ether anesthesia where these movements are also eliminated. Under these conditions, the difference is still found and the P^{32} results suggest that part of the effect is due to a decrease in the utilization of ATP leading to the accumulation of high energy phosphate bonds in the ATP and phosphocreatine fractions of the muscle. The possible bearing of these results on previous work on the effect of Mg^{++} on the biological behaviour of the adenine nucleotides is discussed.

MOHIUDDIN, A. (1950.) **The fate of the nerves of the deciduous teeth.**—*J. Anat.* **84.** 319-323. [Author's summary slightly modified.] 536

Nerves of deciduous teeth about to be shed from five adolescent cats were compared with nerves of sound permanent and deciduous teeth in five young and adult cats. Degenerative changes could always be demonstrated in the axons in the pulp of deciduous teeth in process of shedding. These changes were confined to axons 1μ or more in diameter; finer axons disappeared without preceding changes demonstrable by the silver impregnation methods employed. The onset of degeneration in the nerves preceded evidence of root resorption. Degenerative changes were found only in the axons in the pulp; they were terminal and preterminal in location and did not spread centrally to involve the axons in the dental nerve trunks.

SMITH, H. W. (1947.) **The excretion of water.**—*Bull. N.Y. Acad. Med.* **23.** 177-195. 537

A general review of the literature.

—P. H. HERBERT.

TIMIRAS, P. S. & SELYE, H. (1949.) **On the participation of the reticulo-endothelial system in the alarm reaction.**—*Science.* **110.** 560-561. 538

In rats subjected to stress (cold, spinal cord transection, exhausting exercise) there was increased deposition of indian ink particles in the lungs, kidneys, adrenal glands, bone marrow and the hibernating gland, suggesting active participation of the reticulo-endothelial system in the alarm reaction.

—P. H. HERBERT.

KIBLER, H. H. & BRODY, S. (1949.) **Environmental physiology, with special reference to domestic animals. VII. Influence of temperature, 50° to 5° F and 50° to 95° F, on heat production and cardiorespiratory activities of dairy cattle.**—*Res. Bull. Mo. agric. Exp. Sta.* No. 450. pp. 28. [Authors' abst. copied *verbatim.*] 539

This report presents data on the effects of slowly and rapidly decreasing and increasing temperatures from 50° to 5° F and from 50° to 95° F on rectal temperature, pulse rate, respiration rate, heat production computed from oxygen consumption and carbon dioxide production, methane production, and pulmonary ventilation rate in lactating and non-lactating Jersey and Holstein cows. Rectal temperature was constant below 70° F and rose above 70° F. Respiration rates of 20 to 30 per minute at 50° F decreased to 10 to 15 at 5° F and increased to over 100 at 95° F. Heat production and pulse rate reached minimal levels between 40° and 60° F indicating that the zone of thermoneutrality lay in this range; below and immediately above the thermoneutrality zone these functional responses increased; and above 70° or 80° F they decreased. Rapid changes

in temperature tended to accentuate these responses. Extreme changes in temperature produced acclimatization effects which lasted several weeks.

THOMPSON, H. J., MCCROSKEY, R. M. & BRODY, S. (1949.) **Environmental physiology, with special reference to domestic animals. VIII. Influence of ambient temperature, 0° to 105° F, on insensible weight loss and moisture vaporization in Holstein and Jersey cattle.**—*Res. Bull. Mo. agric. Exp. Sta.* No. 450. pp. 19. [Authors' abst. copied *verbatim*.] **540**

A method is described for measuring directly insensible (invisible) loss in 1500 lb. cattle for one-hour intervals with a precision of 18 grams. Voluminous data are presented on the effect of ambient temperature 0 to 105° F on insensible loss and moisture vaporization in Holstein and Jersey cattle. The ratio curves of heat dissipation by vaporization to heat production in cow and man cross at 92° F ambient temperature when about 75% of the heat production is dissipated by vaporization. The ratio of heat dissipation by vaporization to heat production becomes unity (100%) at ambient temperature 94° F in man and about 102° F in cows. Prior to about 90° F, the heat dissipation by vaporization in cattle is higher than in man (at 80° F, *cows* dissipate by vaporization 70% of the heat produced, but man dissipates by vaporization only 25% of the heat production; at 70° F, man dissipates about 18% and cow 50% of the heat produced).

HAMILTON, J. B. & MONTAGNA, W. (1950.) **The sebaceous glands of the hamster. I. Morphological effects of androgen on integumentary structures.**—*Amer. J. Anat.* **86.** 191-233. **541**

The effect of androgens on the skin has been studied in male hamsters by observation of changes in the pigmented costovertebral spots which are male secondary sex characters and react readily to male hormones. The chief changes observed were a massive increase of sebaceous tissue, the appearance of conspicuous droplets and pyknosis of the nuclei. The growth of coarse black hairs and enhanced melanosis of the spots were also noted. These changes occur within 72 hours and suggest that the complexion of the skin and the sedimentation rate of blood can rapidly reflect changes in the degree of androgenic stimulation and that androgen titres may fluctuate to a marked degree during an illness.—J. A. NICHOLSON.

MONTAGNA, W. (1950.) **Perinuclear sudanophil bodies in mammalian epidermis.**—*Quart. J. micr. Sci.* **91.** 205-208. [Author's summary copied *verbatim*.] **542**

In the epidermis of laboratory mammals there are perinuclear lipid spherules which are demonstrated clearly with sudan black. The centre of the larger of these droplets is occupied by a sudanophobe core of varying dimensions. The distribution of the bodies corresponds to the osmiophil elements in comparable tissues, and the structural pattern is similar to that of the Golgi elements in other tissues, as described by Baker and his associates [*Quart. J. micr. Sci.* **85.** 1 and **90.** 295].

With the exception of the skin of the monkey, the lipid bodies are negative to the acid haematein test.

BUNTING, H. (1950.) **Interstitial desoxyribonucleic acid following cell death.**—*Yale J. Biol. Med.* **22.** 521-525. [Author's summary copied *verbatim*.] **543**

The hematoxylin-stained material commonly seen extracellularly in the interstitium of regions of necrosis, such as infarcts or caseous exudate, has been subjected to various histochemical tests; the material exhibits both basophilia and acidophilia, is not affected by ribonuclease, and gives the Feulgen reaction. The staining qualities are concluded to be consistent with the presence of desoxyribonucleic acids and associated histones derived from nuclei of necrotic cells of the exudate and the parenchyma.

ROSENBLITH, W. A., GALAMBOS, R. & HIRSH, I. J. (1950.) **The effect of exposure to loud tones upon animal and human responses to acoustic clicks.**—*Science.*. **111.** 569-571. **544**

Exposure to loud tones caused, in cats, a reduction in response of the neural component to clicks, but the microphonic component of the response remained unaffected; recovery of the former depended upon the intensity, frequency and duration of the exposure tone. Recording at the round window or the auditory cortex gave similar results. There appeared to be some relation between the neural responses of animals and human thresholds to the click sounds after exposure to loud tones.

—R. MARSHALL.

GEMZELL, C. A. & SAMUELS, L. T. (1950.) **The effect of hypophysectomy, adrenalectomy and of ACTH administration on the phosphorus metabolism of rats.**—*Endocrinology.* **47.** 48-59. [Authors' summary copied *verbatim*.] **545**

The turnover of inorganic phosphate between plasma and tissues in normal rats has

been compared with that of animals which were adrenalectomized, hypophysectomized, or hypophysectomized and treated with adrenocorticotrophic hormone, using P^{32} as a tracer. Hypophysectomy markedly reduced the rate of turnover of inorganic phosphate between the cells and the extracellular fluids of all the tissues measured. It did not significantly affect the concentration in these tissues, however, even though the plasma level was reduced by 18%. Adrenalectomy 24 hours before the injection of the isotope did not significantly affect the turnover of phosphorus in any tissue except the muscle.

The injection of adrenocorticotrophic hormone into hypophysectomized rats increased the rate of turnover in all of the tissues studied. It restored the rate to normal in all tissues except muscle and brain. Plasma phosphate was further reduced, however, apparently due to retention of water. Apparently the systems involved in the transfer of phosphate across cell boundaries are under the control of ACTH [adrenocorticotrophic hormone]; whether this is direct or via the adrenals is not clear. The regulation of the plasma phosphate level, however, depends on some other pituitary factor, probably the growth hormone.

PEETERS, G. & MASSART, L. (1950.) **Artificial lactation and perfusion of the bovine mammary gland.**—*Research.* **3.** 217-221. **546**

An apparatus is described for the perfusion of the isolated cow udder. It is so designed that the two halves of the udder are perfused separately, one half thus serving as a control for the other half. Heparin proved to be the most suitable anticoagulant for the perfusing blood. Numerous experiments are described to illustrate the value of the perfusion technique in physiological and biochemical studies of milk secretion.—A. T. COWIE.

BOWLAND, J P., GRUMMER, R. H., PHILLIPS, P. H. & BOHSTEDT, G. (1949.) **The vitamin A and vitamin C content of sows' colostrum and milk.**—*J. Anim. Sci.* **8.** 98-106. **547**

The vitamin A and vitamin C contents of colostrum and milk were determined in 20 sows, half the animals being on pasture and half in dry-lot. For these two groups respectively vitamin C levels (mg. per 100 ml.) were 18·8 and 24·6 in colostrum and 10·4 and 12·2 in normal milk. Coresponding vitamin A levels (μg. per 100 ml.) were 143·6, 132·9 and 52·7, 34·8.—P. H. HERBERT.

ANANTAKRISHNAN, C. P., RAO, V. R. B., PAUL, T. M. & RANGASWAMY, M. C. (1946.) **The component fatty acids of buffalo colostrum fat.**—*J. biol. Chem.* **166.** 31-33. **548**

The fatty acid composition of colostrum of Indian buffaloes was determined on the first, second, third and tenth day after parturition. As the colostrum changed to milk, there was an increase in the concentration of butyric, myristic and palmitic acids, but a decrease in stearic and oleic acids.—E. EDEN.

LECKS, H. & WOLMAN, I. J. (1950.) **Fetal hemoglobin in the human. A review.**—*—Amer. J. med. Sci.* 219. 684-689. [Authors' summary copied *verbatim*.] **549**

The hemoglobin of the newborn is made up of two forms: a fetal hemoglobin (approximately 80%) and a more mature or adult hemoglobin (approximately 20%). This fetal hemoglobin disappears from the blood after four to six months of life. The difference between fetal and adult hemoglobin probably resides in the globin fraction of the hemoglobin compound and accounts for the following distinguishing properties of fetal hemoglobin: A greater resistance to alkali denaturation; a quantitative and qualitative different amino-acid content; distinct serologic reactions and electrophoretic mobility; a different crystalline molecular structure and a difference in its affinity for oxygen and carbon dioxide. The possible clinical applications are discussed.

MOSONYI, L., PÁLOS, L. A. & KOMAROMY, J. (1949.) **Penicillin and blood coagulation.**—*Acta. med. scand.* **135.** 458-464. [In English. Authors' summary slightly modified.] **550**

The effect of penicillin on the coagulation of blood depends on the phase in which the substance is added to the system. By this statement the seemingly controversial observations made by various authors can be brought into harmony. Penicillin administered into the circulation inhibits the inactivation of thrombin (the oxidizing capacity of its SH group plays a prominent part in this process), it diminishes the clotting time and gives rise to thrombus formation. On the other hand, the penicillin applied to the wound surface or added to *in vitro* systems in high concentration acts on the fibrinogen in a manner inhibiting its precipitation.

These examinations corroborate the authors' earlier presumption that in the mechanism of penicillin effect a prominent rôle is played by its SH group. Their data support

the concept of Pálos on the correlation between coagulation and oxidation-reduction processes.

MIALE, J. B. (1949.) **The role of staphylocoagulase in blood coagulation. I. The reaction of staphylocoagulase with coagulase-globulin (CG) to form coagulase-thrombin CT).**—*Blood.* **4.** 1039-1048. [Author's summary slightly modified.] **551**

Sterile cell-free filtrates of broth cultures of some strains of staphylococci contain a substance (staphylocoagulase) which does not clot purified fibrinogen, but does clot oxalated plasma.

When a plasma factor (coagulase globulin, CG) is added to staphylocoagulase a thrombin-like substance (coagulase-thrombin, CT) is progressively formed which is able to clot purified fibrinogen.

When the clotting times of plasma with increasing amounts of either staphylocoagulase or CT are plotted against concentrations of the clotting agents, hyperbolic curves are obtained which are similar to those obtained with classic prothrombin or thrombin.

CG appears to be distinct from the "accelerator globulin" of Seegers (1947), the "V" factor of Owren, and "anti-hemophilic globulin" of Taylor and co-workers. The presence of CG in platelets could not be demonstrated.

MILSTONE, J. H. (1950.) **The problem of the lipoid thromboplastins.**—*Yale J. Biol. Med.* **22.** 675-687. [Author's conclusion copied *verbatim.*] **552**

Along with the hypotheses proposed in the past, more attention should be given to the possibility that prothrombin can be activated by one or more enzymes, and that this basic process can be modified in an indirect or secondary manner by lipids and by lipoproteins.

BOHN, C. L. S., LANDBOE-CHRISTENSEN, E. & PLUM, C. M. (1945.) **On the importance of the duodenal glands of Brunner to the formation of red blood corpuscles in swine.** —*Acta med. scand.* **120.** 32-39. [In English.] **553**

In one young pig, the proximal half of the duodenum was isolated and its secretion tapped. The reticulocyte-ripening index of the secretion was almost as high as the corresponding figure for gastric juice in man and equalled that found by the authors in porcine gastric juice. The reticulocyte percentage was above the normal and the reticulocyte-ripening index of the plasma subnormal—although it could be activated by tyrosine—and the haemoglobin percentage was low. In a second pig, a comparable portion of duodenum was excised. Similar haematological changes were observed but, in addition, the animal failed to thrive. The implications of these finding are discussed.

—L. M. MARKSON.

RICE, C. E. & BOULANGER, P. (1950.) **A note on seasonal fluctuations in the complement titre of guinea-pig serum.**—*Canad. J. comp. Med.* **14.** 296-297. [Authors' summary copied *verbatim.*] **554**

A series of observations are recorded which suggest that the decrease in complement titre noted in the g. pig and the horse during late winter and early spring may be related to seasonal factors in addition to dietary deficiencies.

DAVENPORT, H. E. (1949.) **The haemoglobins of *Ascaris lumbricoides*.**—*Proc. roy. Soc.* Ser. B. **136.** 255-270. [Author's summary copied *verbatim.*] **555**

The occurrence of distinct haemoglobins in the perienteric fluid and body wall of Ascaris is confirmed and methods described for the extraction and partial purification of the pigments.

The absorption spectra of the haemoglobins and their principal derivatives were determined.

Both haemoglobins possess a remarkable resistance to deoxygenation. This is due principally to a low deoxygenation velocity. In presence of $Na_2S_2O_4$ at 20·5° C, pH 6, t_{50} for the deoxygenation of the perienteric fluid haemoglobin is 150 sec. compared with 0·008 sec. for sheep haemoglobin (Hartridge and Roughton 1923). With the body-wall haemoglobin the reaction is more rapid; t_{50} at pH 6, 3°C., is 80 ± 10 sec.

The deoxygenation reaction is accurately unimolecular and is independent of the concentration of the reducing agent.

With perienteric fluid haemoglobin the temperature coefficient of the reaction is 5 and the velocity is increased with increase of between 5 and 9.

The velocity of conversion of the oxyhaemoglobins to methaemoglobin in presence of $K_3Fe(CN)_6$ was measured. *In vacuo* t_{50} is the same as for the deoxygenation reaction but diverges from unimolecular characteristics beyond half completion. Although the velocity is independent of the ferricyanide concentration, a measurable back reaction with 0_2 occurs.

CO dissociates from both haemoglobins more rapidly than oxygen; 300 times more rapidly with perienteric fluid haemoglobin at pH 6, 3° C.

When *Ascaris* is kept under anaerobic conditions the body-wall haemoglobin becomes de-

oxygenated but no change could be detected in the perienteric fluid haemoglobin.

LOUSSE, A. & RONSSE, P. (1950.) Le réflexe de fermeture de la gouttière oesophagienne. I. Son contrôle par la mesure de la glycémie après un repas glucosé. [**Glycaemia and reflex closure of the oesophageal groove.**]—*Ann. Med. vet.* **94.** 1-15. **556**

Since glucose undergoes fermentation in the rumen but not if it passes directly into the abomasum *via* the oesophageal groove, a study of blood glucose levels can be used to determine the activity of the groove. For this purpose, a goat, two sheep and a lamb were given glucose as a drench followed by sodium sulphate to bring about closure of the groove or the glucose was simply given by stomach tube. In either case, blood samples were taken thereafter, at 30 min. intervals.

It was found that when given by stomach tube no hyperglycaemia resulted but when given as a drench, a transitory hyperglycaemia occurred which passed off in 60–90 min. A rise of blood glucose in 30–60 min. greater than 22 mg.% indicates that closure of the groove has taken place. Tests with various salts showed that copper sulphate is the most active in causing reflex closure of the groove.

—J. A. NICHOLSON.

MORROW, P. L., BIERMAN, H. R. & JENKINS, R. (1950.) **Effect of ultrasonic vibration on the formed elements of blood from normal and leukemic subjects.**—*J. Nat. Cancer Inst.* **10.** 843-859. [Authors' summary copied *verbatim.*] **557**

The effect of ultrasonic vibration of 635 kcps on formed elements of heparinized human blood was studied *in vitro* in blood obtained from 30 normal subjects and 15 patients with leukemia. The erythrocytes and leukocytes of blood from normal and leukemic subjects were destroyed at a logarithmic rate. The times at which 50% of the cells were destroyed (DT_{50}) were as follows: (1) Erythrocytes from 19 normal subjects, 1·98 to 9·39 min.; leukocytes from 30 normal subjects, 1·69 to 6·75 min. (2) Erythrocytes from 8 cases of lymphatic leukemia 3·64 to 13·00 min.; leukocytes from 11 cases of lymphatic leukemia, 6·60 to 22·30 min. (3) Erythrocytes from 3 cases of myelogenous leukemia, 6·80 to 12·80 min., leukocytes from 4 cases of myelogenous leukemia, 8·20 to 23·00 min.

The DT_{50} of the leukocytes of both lymphatic and myelogenous leukemias is significantly greater than DT_{50} of leukocytes of normal subjects.

BERNE, R. M. & LEVY, M. N. (1950.) **Effects of acute reduction of cardiac output on the renal circulation of the dog.**—*J. clin. Invest.* **29.** 444-454. [Authors' summary copied *verbatim.*] **558**

Acute reduction of cardiac output was produced in dogs by means of graded constriction of the pulmonary artery. Changes in arterial and central venous pressures were measured by means of optical manometers in some experiments and by mercury and water manometers in others. Alterations in cardiac output were determined by the Fick procedure, and renal circulatory data obtained by clearance techniques. Experimental observations were made during pre-operative and post-operative control periods, during periods of acutely reduced cardiac output and during subsequent recovery periods.

Effective renal blood flow was diminished by compression of the pulmonary artery, but to a lesser degree than the cardiac output, resulting in a significant elevation of the renal fraction. Mean arterial pressure fell slightly, and in no case below 80 mm. Hg. Glomerular filtration rate remained unchanged or decreased somewhat, producing a rise in the filtration fraction.

Acute reduction of cardiac output elicited a relatively large increase in the total peripheral resistance, but only a comparatively slight augmentation of the total renal resistance. Analysis of the changes in renal resistance by Lamport's formulae indicates a significant increase in efferent anteriolar resistance countered by a decrease in afferent resistance.

PHILLIPSON, A. T. (1950.) **Microbial digestion in the alimentary tract. General consideration of conditions.**—*Advanc. Sci.* **6.** 346. **559**

The principle means by which the pH of the rumen is maintained close to neutrality is by the passage of ions from the rumen to the blood and also by the absorption of fatty acids. Free propionic acid appears to be preferentially absorbed. Since the proportion of 0_2 present is usually less than 2%, rumen fermentation may be said to be anaerobic. The passage of food from the reticulum to the omasum is continuous and the volume of fluid passing out from the abomasum is not less than 300–450 ml. per hour. The passage of food from the rumen extends over several days. As cellulose may

still be present in the faeces, "time" appears to be a limiting factor in ruminant digestion.
—J. A. NICHOLSON.

UZZELL, E. M., BECKER, R. B. & JONES, E. R., JR. (1949.) **Occurrence of protozoa in the bovine stomach.**—*J. Dairy Sci.* **32.** 806-811. **560**

The role of protozoa in ruminant digestion is briefly reviewed. A table is given of the species found in the rumen, omasum and abomasum, examined immediately after slaughter, in 12 calves and a cow. Two calves were fed fresh citrus pulp for several days and were given no prairie hay to find the effect of a change of diet on the fauna. It appears that the rumen is the site of most activity and that the number and species of protozoa present increase with the age of the animal. The change to citrus pulp tends to reduce the number of species of protozoa.—K. G. TOWERS.

PRUDDER, J. F., LANE, M. & MEYER, K. (1950.) **The effect of orally and intra-arterially administered lysozyme of the canine gastrointestinal mucosa.**—*Amer. J. med. Sci.* **219.** 291-300. [Authors' summary and conclusions copied *verbatim.*[**561**

By administering lysozyme orally and intra-arterially, it has been possible to duplicate the lesions reported previously, i.e. removal of the surface mucus, desquamation of the epithelium, capillary dilatation and hemorrhages in the lamina propria. It still seems most probable that the observed mucosal edema and hemorrhage are secondary to the epithelial damage. The appearance of the rectosigmoid mucosa in chronic ulcerative colitis is consistent with these observations. It is hyperemic, hemorrhagic, edematous, and lacking in surface mucus. Lysozyme is regarded as a causative factor in alimentary ulcerative disease.

MERRILL, J. P., THORN, G. W., WALTER, C. W., CALLAHAN, E. J. & SMITH, L. H., JR. (1950.) **The use of an artificial kidney. I. Technique.**—*J. clin. Invest.* **29.** 412-424. [Authors' summary and conclusions copied *verbatim.*] **562**

The authors described the technique for use of an artificial kidney of the Kloff type. The use of plastic materials and the treatment of glass parts with an anti-wetting agent has decreased the hazard of clotting and reduced the amount of heparin necessary to within the usual therapeutic range. Modification of the rotating couplings and a new type of blood pump have been described. These have minimized trauma to red blood cells and decreased turbulence in the blood circulating through the apparatus. The use of disposable plastic tubing, and careful attention to sterile technique has eliminated pyrogen reactions as a cause of concern.

By enclosing the drum and bath in a hood, the rinsing fluid can be saturated with 5% CO_2. This lowers the pH of the bath fluid and permits calcium to remain in soluble form, thus preventing its removal from the blood.

MILLER, J. H., MCDONALD, R. K. & SHOCK, N. W. (1950.) **The effect of bacitracin on renal function.**—*J. clin. Invest.* **29.** 289-395 [Authors' summary and conclusions copied *verbatim.*] **563**

Parenteral administration of the polypeptide antibiotic substance, bacitracin, in therapeutic doses is followed uniformly by the occurrence of proteinuria and the appearance of renal tubular epithelial cells in the urine, and frequently by the occurrence of glycosuria in the post-absorptive state.

During the period of proteinuria there occurs an acute depression of tubular function and probably also of glomerular function, as manifested by a decrease in the clearances of inulin and PAH [*p*-amino hippuric acid], a decrease in the tubular excretory capacity for PAH, a decrease in the tubular re-absorptive capacity for glucose, and a decrease in the renal extraction of PAH at low plasma levels.

Although proteinuria is present for only six to 10 days following two injections of 1,500 units of bacitracin per kilogram body weight, both glomerular and tubular function remain depressed over a period of weeks, returning only gradually to baseline levels at seven to nine weeks.

MONTAGNA, W. & PARKS, H. F. (1948.) **A histochemical study of the glands of the anal sac of the dog.**—*Anat. Rec.* **100.** 297-317. [Abst. in *Biol. Abstr.* Sect. F. **22.** No. 10. p. 26. (1948), copied *verbatim.*] **564**

The anal sacs of the dog are globular or pyriform structures lined by stratified squamous epithelium, each of which opens by a single duct on the lateral margin of the anus. Two types of glands open into each sac: (1) apocrine sudoriparous and (2) sebaceous glands, the latter being confined to the duct which conveys the combined secretions to the exterior. Phospholipid droplets, protein substances, acid phosphatase, and cytoplasmic basophilia (ribonucleo-proteins) are found in the epithelial cells of the apocrine

tubules. Incineration reveals an abundant white ash residue in the apocrine cells. The sebaceous glands contain demonstrable cholesterol esters, phospholipids, unsaturated glycerides, "plasmal", and alkaline phosphatase. Alkaline phosphatase is found principally in the myoepithelial cells of the apocrine tubules.

BROOKS, M. M. (1947.) **Activation of eggs by oxidation-reduction indicators.**—*Science.* **106.** 320. **565**

Eggs from *Urechis caupo* and *Strongylocentrotus purpuratus* were immersed in sea water containing different dyes which according to their physical properties altered the rH (a function of the oxidation-reduction potential) from 20·5 to 5·2. Formation of the fertilization membrane or the occurrence of cleavage was taken as a criterion of activation. The rH of the solutions in which activation was optimal was roughly comparable to the rH of the spermatozoa.—E. EDEN.

THOMAS, L. E. & MAYER, D. T. (1949.) **The proteins of mamalian spermatozoa and cellular nuclei.**—*Science.* **110.** 393-394. **566**

Boar and ram spermatozoa were extracted in several different ways. Stirring with N. NaOH gave a relatively considerable quantity of two protein fractions with isoelectric points at pH. 6·0 and 4·5 respectively. The amino acid composition of the former, larger fraction and of the residue are recorded. The relation of these various fractions to those obtained by other workers is discussed.—P. H. HERBERT.

LUDWIG, D. J. (1950.) **The effect of androgen on spermatogenesis.**—*Endocrinology.* **46.** 453-481. [Abst. from author's summary and conclusions.] **567**

A study was made of the effect of daily injections of testosterone propionate in doses of 0·01–3 mg. in young rats over a 30-day period and also of daily injections of 4·2 and 8·4 μg. of oestradiol for 30 days in rats 30 days old. Assay of the pituitary glands of the treated rats in immature female rats indicated a decreased content of gonadotrophin with both androgen and oestrogen injectons.

From the data presented in this experiment the conclusion is reached that low doses of testosterone propionate suppress the secretion of gonadotrophins by the pituitary and thus indirectly injure the testis, producing loss of weight and inhibition of sperm formation. High doses, while they likewise inhibit the pituitary, result in a level of androgen which stimulates the seminiferous tubules directly. Thus testicular weight is maintained and spermatogenesis proceeds in a normal manner even in the face of a diminished supply of gonadotrophic hormones.

HALNAN, E. T. (1949.) **The architecture of the avian gut and tolerance of crude fibre.**—*Brit. J. Nutrit.* **3.** 245-252. **568**

Earlier studies of the passage of food through the alimentary tract of the fowl using coloured foods or easily detectable foods have given very variable results. H. in his study used barium meals, X-rays and a stethoscope to note the time relations of the gizzard movements. His results suggest reasons for the very variable results obtained in earlier studies.

The course of the swallowed bolus of food apparently varies depending upon whether the gizzard is full or empty.

In a bird deprived of food so that the crop and gizzard are both empty, the first few mouthfuls of food pass directly from the mouth to the gizzard via the oesophagus and proventriculus, by-passing the crop. The stay in the proventriculus is very short, a matter of seconds only. When the gizzard has received its full load of food subsequent mouthfuls drop into the crop and gradual filling of the crop occurs. During a meal the gizzard contracts at intervals of from 14–17 sec.; at other times the interval is as long as 30 sec. When the meal is completed and the crop filled, a food bolus passes from the crop to the gizzard from time to time as the gizzard empties itself. The very short time which food material remains in the proventriculus apparently explains why this organ is invariably found to be empty on P.M. examination of a healthy bird.

The time of passage of food from the mouth to the cloaca in the fowl is short, the first appearance of the food in different parts of the gut being: crop within a few sec., gizzard 30 sec., duodenum 10 min., cloaca 2 hours.

This rapidity of passage along with the absence of cellulases from the fowl's digestive juice makes it unlikely that much digestion of crude fibre can occur. It is only in the crop and the caeca that there is any possibility of bacterial digestion of fibre. H. concludes that 7·5% crude fibre in the diet is a desirable upper limit in a production diet. The minimum level of fibre for efficient functioning of the digestive system is considered to be 5%.—R. MARSHALL.

I & II. MACFARLANE, M. G. (1950.) **The biochemistry of bacterial toxins. 4. The lecithinase activity of *Clostridium haemolyticum* toxin. 5. Variation in haemolytic activity of immunologically distinct lecithinases towards erythrocytes from different**

species.—*Biochem. J.* **47.** 267-270; & 270-279. [Author's summaries copied *verbatim.*] **569**

I. *Clostridium haemolyticum* toxin contains a lecithinase decomposing lecithin into phosphorylcholine and a neutral fat. The toxin also decomposes sphingomyelin, but does not attack the kephalin types of phospholipin.

The enzyme is inhibited by *Cl. haemolyticum* and *Cl. oedematiens* type B antitoxic sera, but not by *Cl. welchii* or *Cl. oedematiens* type A antitoxic sera, and is apparently identical antigenically with *Cl. oedematiens* β-toxin.

II. Haemolysis of horse and sheep erythrocytes by *Clostridium welchii* and *Cl. oedematiens* toxins was always preceded by decomposition of some of the phospholipin of the cell, indicating that haemolysis is primarily dependent upon the action of the lecithinases present.

The rates of hydrolysis of the phospholipin of intact erythrocytes of horse and sheep by the three immunologically distinct lecithinases—*Cl. welchii* α-toxin and *Cl. oedematiens* β- and γ-toxins—are different.

These differences appear sufficient to account for the known differences in sensitivity of horse and sheep cells to haemolysis by the immunologically specific lecithinases.

After exposure to *Cl. welchii* α-toxin at 37°, sheep erythrocytes undergo extensive haemolysis (hot-cold lysis) on cooling below a critical temperature. This effect is less marked with horse cells and does not occur with human or rabbit erythrocytes.

The significance of the selective action of the lecithinases on erythrocytes of different species is discussed with relation to the problem of virulence and biological dfferentiation.

See also absts. **410** (adrenocorticotrophic hormone); **496** (parathyroid gland); **586** (artificial lactation); **627** (book, biochemistry); **628-630** (books, anatomy).

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

TULLIS, G. (1950.) **Recent milk and dairies legislation and the provision of a safe milk supply.**—*J. R. sanit. Inst.*. **70.** 373-382. **570**

The ultimate aim of the new legislative measures is to ensure that, at some future date, all milk consumed by the public will be either rendered safe by some method of sterilization or produced by cows which are free from diseases communicable to man. The paper deals with the Milk and Dairies Regulations 1949 and the Milk (Special Designation) (Raw Milk) Regulations 1949.

The most important provision of the first of these regulations is that the medical officer of health may stop the sale, or order heat treatment, of milk which he suspects of being infected with any disease, bovine or human, communicable to man. The most important provision of the second is that after 1957 no T.T. licence will be valid unless the herd is fully attested.

These regulations led to 470 applications for tuberculin-tested licences in Somerset between the 1st October 1949 and the 31st January 1950. The new regulations should produce a uniform standard for cow-houses throughout the country, but they fail to provide a greater measure of control over the producer-retailer of non-designated milk, for there is no provision for the sampling and testing of such milk, for which no standard of cleanlines is laid down.

In discussion on the paper the following points were made by various speakers. The provision "scalded with boiling water" could not always be carried out. Many cowsheds were badly ventilated and had inadequate drainage. The words "as and when these farms can be inspected" made it appear that there was an insufficient recruitment of officers to carry out the necessary inspections.

—J. O. L. KING.

DAVIS, J. G. (1950.) **Developments in the bacteriological testing of milk.**—*J. R. sanit. Inst.* **70.** 227-264. **571**

The most important items are the total number of bacteria, the number of coliform or other particularly active bacteria, the keeping quality and the safety of the milk. The milk should be tested on the farm, during transport, and as it reaches the consumer. The advantages and disadvantages of the following tests are clearly set out: plate count, *coli*, microscopic count, methylene blue test at 37° C, resazurin test at 37° C, methylene blue and resazurin tests (complete reduction) at 20° C, clot on boiling, and sediment test. Recognizing that storage temperature is the dominating factor in bacteriological testing the possibility of a temperature compensation scheme is discussed, but it would be extremely difficult to work in practice.

It is recommended for official and advisory purposes, that the plate count and *coli* test, or a cheaper modification of these tests, be adopted for producers' milks, and a dye test at 20° C for both raw and pasteurized consumer milk. The resazurin test has the advantage over the methylene blue test in that it classes milk as

good, indifferent, or bad. The phosphatase test is the most efficient test for pasteurized milk, but it is a very delicate chemical test and should only be carried out by, or under the direct supervision of a chemist. The licensing authorities should test each producer's and distributor's milk once a month, and farmers who consistently produce bad milk should be forced to cease milk production.—J. O. L. KING.

CULLITY, M., HOOD, J. C. & NEEDHAM, K. (1949.) **A preliminary investigation into the seasonal trend of chemical quality of milk from cows in a herd with a reputation for substandard fats and solids-not-fats.**—*J. Agric. W. Aust.* **26.** 49-64. 572

During a period of 12 months weekly samples of morning and afternoon milk from ten cows of a herd supplying under-standard milk were submitted to chemical examination; fat, total solids, protein, lactose, ash and freezing point depression were determined.

Results indicated a seasonal variaton in composition of the milk, especially in fat and solids-not-fat, which at times fell below the minimum prescribed standards, whilst the herd average protein and lactose values were low.

Subsequent to the sampling it was ascertained that the herd contained a "very high percentage" of tuberculin reactors, at least four of the test animals being positive.

—J. H. WHITTEM.

SCHÖNBERG, F. (1949.) Ausgedehnte Tuberkulose, insbesondere Serosentuberkulose, als Grund zur Minderwertigkeitserklärung des ganzen Tierkörpers. **[Down-grading of whole carcasses with extensive tuberculosis especially of the serous membranes.]**—*Dtsch. tierärztl. Wschr.* **56.** 369. 573

S. reviews the position regarding the down-grading of whole carcasses in cases of extensive tuberculosis, especially of the serous membranes.

—G. P. MARSHALL.

GINSBERG, A. (1949.) **The disposal of animal carcases.** *Vet. Rec.* **61.** 760-764. 574

"Wet rendering," the oldest organized process of carcass disposal consist of boiling down the carcasses in large tanks. This method recovers about 7·9% fat, but the bone and meat meal is of poor quality and the process is expensive. "Dry rendering," in which the carcasses are "cooked" in their own juices in steam-heated chambers, gives a higher return of extracted fat and a superior bone meal. "Thermo-chemical" rendering, in which the fat is extracted with benzene or other material, gives the highest return of fat, the most valuable product, but it is stated that the resulting bone and meat meals are unpalatable to livestock. The plant should be so sited that it is unlikely to have dwelling houses built near it in the future, as the fumes are objectionable. There should be good drainage; the effluents and washing water should be sterilized before release. The plant should have its own water supply, preferably soft water. One such plant requires a minimum adult cattle population of 60,000 cattle and horses in its vicinity to enable it to run economically on the 1,000 large carcasses such a population would supply per annum. An air-tight collector tank on a five-ton lorry is needed to collect the carcasses.

—R. MACGREGOR.

STARKE, J. S. (1948.) **Weight losses in slaughter stock during transit.**—*Bull. Dep. Agric. U.S. Afr.* No. 288. pp. 19. 575

In reviewing the literature on this subject, S. points out that the loss is due to fasting and initially, to the emptying of the digestive tract, and then to dehydration of tissues. Fat consumption is not apparent in fasts of a few days' duration only. The initial losses are the greatest, but are really of no economic importance as intestinal contents have no appreciable value. Free access to water diminishes the dehydration. Other factors that have a small influence are muscular fatigue and nervous exhaustion, but these can be replaced by allowing 24 hours' complete rest, with free access to water, after the journey. S. considers that for train journeys of less than 48 hours, it is better to complete the journey as quickly as possible than to delay it by unloading for watering and exercise.—R. MACGREGOR.

See also abst. **508** (rat poisons).

LIVESTOCK HYGIENE

LOWBURY, E. J. (1950.) **The persistence of dust in occupied rooms.**—*J. Hyg., Camb.* **48.** 1-5. [Author's summary copied *verbatim.*] 576

Fluorescein dispersed as powder into the air of occupied rooms was extracted in measurable quantities from dust after as many as 20 previous sweepings. The value of fluorescein

in showing the rate of removal of dust from occupied environments is discussed in relation to the transfer of infection.

LINTON, J. J. K. (1949.) **Polluted water as a cause of unthriftiness in thoroughbred horses.**—*Irish vet. J.* **3.** 390-391. **577**

Laxatives were ineffective in curing constipation in a group of racehorses near Dublin. The common causes of constipation and unthriftiness were ruled out, but it was found that the drinking water was obtained from a river polluted with cement washings. The water contained 280 p.p.m. of a cement-like deposit. When rain water was given as the drinking water, there was a spontaneous recovery of the constipated animals. E. EDEN.

HUGHES, L. E. (1949.) **Some aspects of animal husbandry in relation to preventive medicine.**—*Brit. Vet. J.* **105.** 54-62. **578**

H. stresses the importance of winter nutrition in relation to the health and production of farm stock. It is the weather which finally determines the length of the winter period during which plant life ceases its growth, and certain classes of animals must be fed indoors. The length of the growing period can be extended by cultivating cruciferous and leguminous crops, particularly lucerne, in dry climates, and certain strains of clovers and grasses in wet areas. Also rotational grazing together with a system of ley farming can substantially reduce the length of the indoor winter feeding period. The cows are given the first "bite", and the young stock eat off what remains. H. discusses the danger of the spread of helminth infestation in the young stock in this way, as well as Johne's disease and salmonellosis in adult cattle. A piped water supply is essential in order to reduce the danger of infection from contaminated pools.

Ensilage and grass drying could be extended, particularly in areas of high rainfall. It is suggested that the so-called marginal farms in England and Wales should be drained, ploughed, manured and re-seeded to produce winter food for sheep and cattle coming off the hills in the autumn. There is no profit in expending capital on improving hill lands, and no gain in attempting to improve hill flocks, if the winter nutritional status and management of the flocks is such that the numbers are decimated every few years.

It is suggested that farms specializing in cattle rearing should be established on which it would be possible to develop and apply preventive measures against disease.

—J. O. L. KING.

YOUNG, V. A. (1950.) **Management of sheep on needlegrass ranges to reduce mechanical injury.**—*Vet. Med.* **45.** 197-198. **579**

By a suitable grazing rotation, sheep may be kept off needlegrass (grasses of the genera *Stipa* and *Aristida*) pastures until the seed had shed. This prevents mechanical injury to the flesh which follows penetration by the seeds.

—G. B. S. HEATH.

See also abst. **325** (botulism).

REPRODUCTION AND REPRODUCTIVE DISORDERS

CLARKE, R. (1949.) **Statistical records in A.I. practice.**—*Vet. Rec.* **61.** 861-863. **580**

The growth and development of artificial insemination in Somerset is described. The total membership represents one-third of the milk-producing herds of the county and is still rising. The number of inseminations per bull has risen from 58·3 in 1944 to an estimated 1,300 per bull in 1949. Details are given of the procedure adopted for collection and analysis of data.—D. H. L. ROLLINSON.

ROSMANN, F. (1949.) Betrachtungen and Anregungen zur Technik der künstlichen Befruchtung der Rinder. **[The technique in artificial insemination of cattle.]** — *Wein. tierärztl. Mschr.* **36.** 489-496. **581**

Various types of metal sheath are described for glass inseminating pipettes to prevent accidental breakage, and details are given of a modified thermos flask for semen transport.—A. T. COWIE.

HOELZER, H. (1949.) Der Einfluss des Besamungszeitpunktes auf die Befruchtung beim Rind. **[The influence of the time of insemination on conception in cattle.]**—*Dtsch. tierärztl. Wschr.* **56.** 138-141. **582**

From a study of some 900 cows inseminated at various times during and after oestrus, fertility was found to be highest when insemination occurred 6–8 hours before ovulation.

—A. T. COWIE.

MIKHAYLOV, N. N. 1949.) **[Milk as a semen diluent.]**—*Konevodostvo.* **19.** No. 6. pp. 14-16. **583**

For use as a semen diluent milk from healthy animals was filtered through a gauze, boiled for several [sic] minutes, again filtered

and cooled. It is stated that the boiling converts the lactose into glucose and galactose [freshly drawn milk has a distinct acidity due partly to mono- and dibasic phosphates and partly to dissolved carbonic acid], so providing sources of energy for the spermatozoa. The semen was added to the milk in proportions from 1:2 to 1:25. For horse semen a dilution of 1 : 3 was considered the most suitable. Semen diluted in this manner and stored at 0° to +2° C. retained its viability and potency for 120–160 hours.

It is stated that mares' milk was best for horse semen, although cows', ewes' and goats' milk had been used.—E.G.

GEISSLER, S. (1950.) Vereinfachte Methode zur hormonalen Feststellung der Stutenträchtigkeit durch die Blutuntersuchung. **[Simple pregnancy diagnosis in mares by examination of the blood for hormones.]**—*Mh. Vet.-med.* **4.** 47-53. **584**

When pregnant mares' serum was injected into infantile mice it was noted that in addition to the usual changes in the vaginal smear and in the appearance of the ovaries, there was also opening and swelling of the vulva 3–4 days after the injection. To find whether these external signs were sufficiently reliable in themselves as indicators of gonadotrophic activity of the serum, 1,500 samples of serum were tested noting the changes in vaginal smear and internal sex organs as well as the external changes in the vulva. In only 1% of cases did the appearance of the vulva not correspond with the state of the internal sex organs. In addition, 500 blood samples were tested, reading the test only from the changes in the vulva. Of 953 tests which could be checked, 219 were based on injections into two mice, and of these nine were incorrect; 134 were based on one mouse, and of these 32 were incorrect. It is concluded that the vulvar changes give an accurate indication of the gonadotrophic activity of the serum and that the method is economical since the mice do not have to be killed to read the test.—A. T. COWIE.

DE VUYST & VERVACK. (1950.) Rapport entre le'élasticité de la glaire cervicale de la vache et la fécondation. **[Viscosity of cervical mucus and pregnancy diagnosis in cows.]**—*Ann. Méd. vét.* **94.** 298-300. **585**

Elasticity is always very low in dioestrous and pregnant cows, but as oestrus approaches it becomes very variable, more commonly however having markedly increased during the heat period. It was hoped to demonstrate that there was a strong tendency for conception to ensue only when the oestral mucus elastictiy was on the high side of the average. However, observations on 344 cows indicated that there was no correlation between the occurrence of conception and the degree of elasticity. The ordinary "oestroscope" used is described.

—F. L. M. DAWSON.

LANGHEINRICH, W. (1949.) Ein Beitrag zur Frage der künstlichen Auslösung der Laktation beim Rinde durch Cyren-A. **[Artificial induction of lactation in the cow.]**—*Inaug. Diss., Hannover.* pp. 23. **586**

The induction of lactation in some 20 cows and heifers by implantation of stilboestrol is described. No new observations appear to have been made.—A. T. COWIE.

DIMITROPOULOS, E. (1949.) Influence des substances oestrogènes sur le système génital des femelles. **[Effect of oestrogen therapy on the oestrus cycle of cows.]**—*Ann. Méd. vét.* **93.** 281-289. **587**

Experience at an artificial insemination centre suggests that the indiscriminate use of stilboestrol is to be deprecated. Nine cases are recorded in which it was used and although heat followed in two or three days, none of the cows conceived but only did so when inseminated at a naturally occurring heat 3–4 weeks after treatment. It is considered that injections of oestrogens upset the balance of the sex regulating mechanism and may lead to the development of cystic ovaries.

—J. A. NICHOLSON.

NAIMANOV, I. D. (1950.) Opyt stimuljacii polovoĭ funkcii kobyl celjnoĭ krovjju zerebyh kobyl, stabilizirovannoĭ giposuljfitom i buroĭ. **[Stimulation of the sexual function of mares by pregnant mare whole blood, stabilized with hyposulphite and borax.]**—*Konevodstvo.* **2.** 21-25. [Abst. in *Anim. Breed. Abstr.* **18.** 150. (1950), copied *verbatim.* Signed: G.R.R.] **588**

In horses the duration of oestrus and time of ovulation during oestrus are governed by environment; oestrus does not last so long and ovulation occurs earlier in oestrus in summer or when management and feeding are good, than in winter and early spring or when management and feeding are poor. Blood was taken from the jugular vein of mares during the 40th–100th day of pregnancy and added to distilled water containing 2% borax and 1% hyposulphite. Subcutaneous injections of 15–20 ml. of this solution were given to 158 mares on collectve farms in Buryat-Mongolia; oestrus

was induced and ovulation occurred early in oestrus in all the mares. In August 1948 oestrus was induced by this method in 19 mares which had failed to conceive; 18 conceived to service. Details of ten typical cases are tabulated.

BOURG, R. & SIMON, J. (1950.) **Discussion on the use of oestrogen therapy in gynaecology. Studies on pseudogestation and prolonged oestrus after injection of large doses of oestradiol in adult rats.**—*Proc. R. Soc. Med.* **43.** 719-730. [Authors' summary copied *verbatim*.] **589**

All the animals were examined at different times during the three weeks that followed the injections. The originality of this paper consists in the observation of endometrial retrogressive transformations during the well-known pseudo-pregnant phase. This phase immediately follows the injections and at its end the uterine mucous membrane resumes its oestrous or dioestrous state. Similar, but less marked, appearances have been noticed in the same conditions in castrated animals. The continued oestrus, that immediately follows the changes of pseudo-pregnancy in the vaginal mucosa, is characterized by the growth of a greater number of young follicles and the cystic maturation of some others; the follicular wall of some of them can become wrinkled. This has an ovarian cause. Intermediate states also appeared between those two phases in the vagina. Four animals had haemorrhage in the vaginal lumen; the haemorrhage was of a post-oestrous type.

COLOMBEL, J. (1950.) Toxicité des oestrogènes de synthèse dans la chair des coqs, castrés chimiquement. **[Toxicity of oestrogens in the flesh of capons castrated by stilboestrol.**[—*Rec. Méd. vét.* **126.** 100-108. **590**

Liver from cocks, castrated by implantation of synthetic oestrogen pellets, gave positive results in the Allen-Doisy test for oestrogens. Livers from such birds, fed to post-menopausal women, led to vaginal changes and increased secretion suggestive of treatment with oestrogen.—P. H. HERBERT.

COUSSENS, R., PEETERS, G., MASSART, L. & SIERENS, G. (1948.) Oestrogene eigenschappen van tulpenbollen. **[Oestrogenic properties of tulip bulbs.]**—*Vlaam. Diergeneesk. Tijdschr.* **17.** 119-121. [English and French summaries.] **591**

Because of the food shortage during the last months of the war in the Netherlands, tulip bulbs were frequently eaten. Their consumption became associated with disorders of the menstrual cycle in women. A lipoid extract of such bulbs has now been found to have oestrogenic activity equivalent to 250–500 mouse units per kg. of bulbs.—A. T. COWIE.

BUTLER, C. A. (1947.) **Notes on fertility in Friesian bulls.**—*J. R. Army vet. Cps.* **18.** 139-141. **592**

An account of an investigation into the fertility of four Friesian bulls by means of examination of service records and semen samples.
—ROY MACK.

VAN DER SCHAAF, A. (1950.) Onvruchtbaarheid bij stieren. **[Sterility in Bulls.]**—*Hemera Zoa.* **57.** 3-42. [English and French summaries. Abst. from English summary.] **593**

The author states that sterility in bulls is responsible for great economic loss. Venereal conditions are responsible for a high proportion of this loss. When trichomoniasis is suspected thorough microscopic, cultural and serological investigations should be carried out. Semen abnormalities may be diagnosed from a stained film of fresh sperm. Any intermediate state from good fertility to absolute sterility may be present. Acquired sterility is often due to some inflammatory condition of part of the genital tract and congenital sterility is due to hypoplasia of the testes or accessory glands.

Widespread examination of bulls in the Friesian province of Holland is necessary to determine the incidence of sterility.
—E. J. H. FORD.

MEGALE, F. (1949.) Sôbre a incidência da esterilidade em vacas no estado de Minas Gerais. **[The incidence of sterility in cows in Minas Gerais, Brazil.]**—*Arq. Esc. Sup. Vet., Minas Gerais.* **2.** pp. 17-27. [Abst. from English summary.] **594**

M. describes several cases of infertility in cows, observed in the State of Minas Gerais (Brazil). The clinical observations include cases of brucellosis, persistence of corpus luteum, ovarian cysts, metritis, cervicitis, vaginitis, uterine and vaginal prolapses, the occurrence of the freemartin, recto-vaginal fistulas, deviations of the cervix and the effects of hypophosphorosis.

ANON. (1950.) **Night blindness in dogs. Progress report** No. 2. pp. 6. London: Animal Health Trust. 1s. 6d. **595**

This is a brief and semi-popular account of progressive retinal atrophy. It is stated that

the disease was first described in Sweden, where six Gordon Setters, all related to a dog imported from Britain, were affected. Breed records indicate that it probably became prevalent in Irish Setters in Great Britain during the early nineteen-twenties, following extensive line- and inbreeding to a dog that was a carrier of the gene responsible. As a result of the export of dogs from Great Britain the disease has since been established in Australia, the U.S.A., France and Holland. The Irish Setter Association (England) has taken steps to prevent breeding from animals likely to produce affected progeny.

The disease may be recognized at from 6–8 weeks of age. In dim light there is found to be increased reflection from the tapetum. As the condition progresses night-blindness sets in and eventually the animals may be unable to see in daylight. Breeders state that the progress of the disease is accelerated by distemper, pregnancy and parturition, especially if labour is difficult or prolonged. In many affected setter families there is said to be a high incidence of monorchidism or cryptorchidism in the males, and delayed onset of first heat and irregular oestrous periods in the females.

Either the sire or the dam can carry the responsible autosomal recessive factor.

—Alastair N. Worden.

See also abstr. **483** (rats); **485** (puerperal paresis); **487** (milk fever); **631** (book, pregnancy diagnosis).

ZOOTECHNY

Seath, D. M. (1949.) **Adding to the comfort and increasing the feed consumption of cows during summer months.**—*Proc. XIIth Internat. Dairy Congr., Stockholm.* **1.** Sects. I & VI. 629-635. [In English: French & German summaries.] **596**

Various methods were tried to reduce the body temperature of cows grazing in a hot climate. A combination of increased air movement and the sprinkling of the cows with water by means of an automatic device proved to be most satisfactory. Supplementary hay feeding did not increase the milk yield.

—E. Eden.

Furlong, J. R. (1948.) **The training of hide inspection officers and flaying instructors.**—*Bull. imp. Inst., Lond.* **46.** 180-183. **597**

The poor quality of hides and skins produced by many countries is a source of considerable loss to the world leather industry and also to the inhabitants of the countries concerned. F. proposes the formation of a Hides and Skins service consisting of Hide Inspectors, men of good education who have taken a recognized course at the Leathersellers College, and Flaying Instructors who have had sufficient practical experience to enable them to become good teachers of their craft. Both grades would undergo a short course on local conditions in the country concerned, and then endeavour to instruct the inhabitants.

—R. Macgregor.

See also abstr. **523** (dips); **578** (animal husbandry).

TECHNIQUE AND APPARATUS

Karlson, A. G., Delaude, A. & Needham, G. M. (1950.) L'emploi de la gelose au jaune d'oeuf pour la mise en evidence des bacilles tuberculeux résistants à la streptomycine ou à l'acide para-aminosalicylique. [**An egg-yolk agar medium to test for streptomycin-resistant and *p*-aminosalicylic acid resistant tubercle bacilli.**] — *Ann. Inst. Pasteur.* **78.** 97-104. **598**

The resistance of tubercle bacilli to streptomycin or *p*-aminosalicylic acid is tested on solid medium, the drug being incorporated in glycerin agar to which egg yolk has been added. This medium is suitable either for inoculation directly with the pathological material or with a culture. The results for streptomycin resistance can be read after a fortnight, sometimes earlier. The reading for resistance to *p*-aminosalicylic acid is done after two weeks and again after four weeks. The authors report on the finding of strains resistant to both drugs simultaneously. Apart from the easy preparation of the medium and easy handling of the cultures it allows some assessment of the quantity of resistant growth, which in fluid cultures is not possible.—A. Mayr-Harting.

Taylor, C. B. (1950.) **An improved method for the preparation of silica gel media for microbiological purposes.**—*J. gen. Microbiol.* **4.** 235-237. [Abst. includes author's summary copied *verbatim*.] **599**

A base exchange column for the preparation of silica sols is described. Neutral sodium

silicate of a certain dilution is passed at controlled speed through a glass tube three feet long containing a base-exchange material whereby cations are removed from the sodium silicate. Sols prepared by the method can be sterilized by heat treatment and are stable for some weeks. Bacterialogical media can easily be prepared with such sols and the gelling time regulated by the concentration of sodium chloride used.

GREENE, L. W., JR. & HESSELTINE, H. C. (1950.) **Use of ultraviolet light and fluorescent dyes in bacterial counting.**—*Proc. Soc. exp. Biol., N.Y.* **74.** 171-173. [Authors' summary slightly modified.] **600**

The use of ultraviolet light and fluorescent dyes as an adjunct to the Petroff-Hausser bacterial counting chamber technique is reported. This method has made bacterial counts more accurate because of clarity, ease and rapidity. Berberine sulfate was the dye of preference although Auramine-O and Rhodamine-B were gauged equally as good. Twelve strains of bacteria, one protozoan, and one fungus were used in testing this procedure. All 14 organisms gave excellent fluorescent reaction to three dyes and 11 strains gave excellent results to a fourth dye.

POTTY, G. L. (1948.) **A simplified procedure for staining acid-fast bacteria in smears and tissue sections.**—*Bul. Internat. Assoc. Med. Mus.* **28.** 188-191. [Abst. in *Stain Tech.* **25.** 55-56. (1950), copied *verbatim*. Signed: ETHEL LIEB.] **601**

The author proposes a method which can be used for either smears or paraffin sections carried down to water as usual. The following two solutions are employed: (1) Dissolve 4 g. certified basic fuchsin in 25 ml. 95% ethyl alcohol, and 12 g. liquified phenol crystals, mix well and add 25 ml. glycerol C.P. and distilled water q.s.ad 130 ml., let stand 30 min., and pass through a diatomaceous filter or Seitz filter sheet. (2) Prepare 110 ml. 2% aq. certified malachite green; mix with 15 ml. glacial acetic acid, and then add 25 ml. glycerol, C.P. (Both solutions keep indefinitely at room temperature). The technic is as follows: Stain sections 5 min. or smears 3 min. in solution 1; wash in distilled water. Decolorize and strain simultaneously in the acid malachite green solution, 5 min. for sections, 2 min. for smears (restaining the smear 1–2 min. if background is not an even green); dehydrate, clear, and mount.

BARTHOLOMEW, J. W. & MITTWER, T. (1950.) **A simplified bacterial spore stain.**—*Stain Tech.* **25.** 153-156. [Authors' abst. copied *verbatim*.] **602**

A simplification of the Schaeffer-Fulton spore stain for bacteria is presented. It is shown that omission of the heating step during staining with malachite green resulted in spore stains as good as when the heat was applied. The simplified procedure involves (1) heat fixation of the smear by 20 passages through the flame, (2) staining with saturated aqueous malachite green for 10 min., (3) rinsing, and (4) counterstaining with 0·25% aqueous safranin for 15 seconds. The omission of the heating step in staining has obvious advantages, particularly in the classroom.

MOSKOWITZ, N. (1950.) **The use of protein silver for staining protozoa.**—*Stain Tech.* **25.** 17-20. [Abst. from author's abst.] **603**

A description of the preparation of a substitute for Protargol, used when commercially prepared silver products suitable for staining protozoa by the Bodian silver technic became unavailable.

LASH, J. J. (1950.) **A simplified casein hydrolysate-serum medium for the cultivation of *Trichomonas vaginalis*.**—*Amer. J. trop. Med.* **30.** 641-642. [Author's summary copied *verbatim*.] **604**

A casein hydrolysate-serum medium is described, for the cultivation of *Trichomonas vaginalis*. This simplified medium is more easily manufactured, contains fewer constituents than a previously described formula and adequately supports the growth of trichomonads as shown in over 160 subcultures.

GORDON, H. McL. (1950.) **Two counting chambers for the enumeration of helminth ova.**—*Trans. R. Soc. trop. Med. Hyg.* **43.** 366. **605**

G. demonstrated, at a laboratory meeting, a modified McMaster egg count chamber and a new sliding top apparatus, which has proved useful for counting fluke eggs. A solution of potassium mercuric iodide was used as the flotation fluid.—M. L. CLARKE.

RICHARDS, O. W. (1947.) **Phase photomicrography.**—*J. biol. Photog. Ass.* **16.** 29-38. [Author's summary copied *verbatim*.] **606**

Phase microscopy is a method for controlling the contrast in the image and is useful for the examination of transparent materials with small optical path differences or low absorption contrast, such as living organisms and stained

specimens of low contrast. The structure and use of the phase microscope is discussed briefly with respect to photomicrography. Stereophotomicrographs show good detail and are useful in many research studies. A fast flash tube lighting is described to stop locomotion and Brownian motions of the specimen and a simple, visual step photometer is described for estimating the required exposure.

SCHEFF, G. J. & RALPH, P. H. (1949.) **An improved method of counting blood platelets and its evaluation in blood of rabbits.**—*Amer. J. clin. Path.* **19.** 1113-1121. **607**

Blood from the central artery of a rabbit's ear or the antecubital vein in man was drawn into a syringe containing Aynaud's fluid (sodium citrate, sodium chloride and formaldehyde) as a mild fixative. After centrifuging at 700–750 r.p.m., the supernatant liquid containing the platelets was collected and the residue was again mixed with Aynaud's fluid and again centrifuged. A third centrifuging was necessary to complete the separation of red cells and platelets. The collected portions of supernatant liquid were shaken for two minutes then a drop was removed to a counting chamber where a direct dark field count was made.

For rabbit and man the authors found higher counts than those recorded by other authors but agreement between samples was good.—R. MARSHALL.

REID, A. F. & ORR, M. K. (1950.) **A rapid method for determining blood volumes by use of P^{32}-labelled red cells.**—*J. clin. Invest.* **29.** 313-316. [Authors' summary copied *verbatim*.] **608**

A simple method is described for the determination of circulating blood volume, using red blood cells labelled with radioactive phosphorus and washed after injection. The radioactivity of the whole blood is measured using standard Geiger counter equipment. Several errors and time-consuming procedures inherent in other methods using this tracer have been eliminated.

SCHALM, L. & SCHULTE, M. J. (1950.) **The quantitative determination of the two types of bilirubin simultaneously present in the blood, and its clinical importance.**—*Amer. J. med. Sci.* **219.** 606-616. [Authors' summary copied *verbatim*.] **609**

A method is described based on experimental data, by which the various amounts of direct (quick) and indirect (slow) reacting bilirubin simultaneously present in the blood can be determined. This separation is based on determination of the rate of azo-bilirubin formation, already current in clinical work. The determination of these various fractions will probably give an insight into the anatomical and functional state of the liver parenchyma.

BOYD, G. A., CASARETT, G. W. & WILLIAMS, A. I. (1950.) **Making autoradiographs of individual blood cells.**—*Stain. Tech.* **25.** 13 - 16. [Authors' abst. copied *verbatim*.] **610**

Single blood cell autoradiographs were made by smearing blood, diluted with serum, directly upon the emulsion of an Eastman NTB plate. After exposure, the plates were developed in D.19. A 10% sodium sulfate solution was used for the photographic fixing to prevent lysis of the cells. After staining with Wright's stain the cells and autographs could be examined simultaneously under the microscope.

WRETE, M. (1950.) **The differentiated silver impregnation of certain conducting pathways in the peripheral nervous system.**—*Stain. Tech.* **25.** 149-152. [Author's abst. slightly modified.] **611**

Foetuses of human beings, rabbits and mice can be silver-impregnated in such a way that different kinds of nerve-fiber pathways in the peripheral nervous system are distinguishable from one another by different degrees of impregnation intensity. In the application of Bielschowsky's technic, it is important that the impregnation time in silver nitrate should be tested with respect to the species in question. The time is for man 6 weeks, for rabbit 3 weeks and for mouse 2–3 days.

NASSAR, T. & SHANKLIN, W. M. (1950.) **Staining pineal parenchyma by a modified Hortega method after paraffin embedding.**—*Stain. Tech.* **25.** 35-38. [Authors' abst. copied *verbatim*.] **612**

Fresh pineal glands are fixed in 10% formalin at room temperature for about three days. After washing, dehydrating and clearing they are embedded in paraffin, sectioned and mounted. The tissues are placed in 10% silver nitrate for 24 hours, washed and impregnated in strong silver carbonate. The sections are reduced in 10% formalin, washed and toned in gold chloride, fixed in 5% hyposulfite, counterstained with erythrosin and mounted in Canada balsam. The processes of the pineal parenchymatous cells of the sheep, cow and man have been successfully stained by this method.

LASKEY, A. M. (1950.) **A modification of Mayer's mucihematein technic.**—*Stain. Tech.* **25.** 33-34. [Author's abst. copied *verbatim.*] **613**

A relatively simple technic giving consistent results has been evolved from Mayer's mucihematein technic by substituting hematoxylin for hematein and omitting the nitric acid. The hematoxylin is iodized with sodium iodate ($NaJO_3$). This modification is effective on the same types of mucin as Mayer's original mucihematein. With this modified technic, mucin stains a deep violet, cell nuclei pale gray blue, and connective tissue pale gray to colorless in tissues fixed in all the more common fixatives. The modified stain retains this selectivity for at least 200 days.

ROOFE, P. G., HOECKER, F. E. & VOORHEES, C. D. (1949.) **A rapid bone sectioning technic.**—*Proc. Soc. exp. Biol., N.Y.* **72.** 619-622. **614**

A description of a technique for cutting thin sections of dry, undecalcified bone at the rate of 20–40 an hour, and serially with the loss of not more than 150 microns between each section. The sectioning apparatus is a conventional brain microtome adapted by substituting a rotary, motor-driven saw blade for the stationary knife. The motor is mounted on a solid steel bar machined to fit the knife blade clamps, thus permitting fine adjustment of the plane of section. The bone to be sectioned is mounted in the reciprocating carriage and fed to the saw which, in this instrument, is 150 microns thick. To cut sections 20–30 microns thin necessitates embedding the bone in a thin shell of bioplastic with a rectangular base block for clamping the specimen to the carriage. Before cutting each section a flexible, plastic coverslip is placed over the free end of the bone and held in place by a clamp. During cutting, the heat generated by the saw blade softens the plastic coverslip just enough to secure the section after it has been detached.

—L. M. MARKSON.

LILLIE, R. D., WINDLE, W. F. & ZIRKLE, C. (1950.) **Interim report of the committee on histologic mounting media: resinous media.** —*Stain. Tech.* **25.** 1-9. [Authors' abst. copied *verbatim.*] **615**

The Fisher "Permount" naphthalene polymer, the Hartman Leddon "H.S.R." terpene polymer resin, a Monsanto polystyrene P–1, the Will Corporation "Diaphane" and "Green Diaphane", and the du Pont "Lucite" methyl methacrylate polymer were examined, and the possibility of use of some other plastics was also explored. The first five mentioned were tested for color preservation of a variety of stains in comparison with Canada balsam and Clarite X. From this point of view polystyrene, the Hartman Leddon "H.S.R." and the Fisher "Permount" resins were the most satisfactory, then the "Diaphanes". Both "Permount" and "H.S.R." show some yellowing. The H.S.R. with a melting point of 115° C., the Permount with 150° C. melting point, and the Polystyrene with a thermal denaturation point above 220° C. all excell Canada balsam in heat resistance. Trimethylbenzene, cymene and monoamylbenzene appear to be the best solvents for polystyrene. Mounts made in a solution of 20 g. polystyrene in 100 ml. trimethylbenzene can be packed flat slide to slide in 24 hours after mounting without sticking together.

This report is not intended to deprecate the use of other resinous mounting media which have not as yet been tested or compared with those mentioned herein.

LAZAROW, A. (1948.) **Screw syringe.**—*J. Lab. clin. Med.* **33.** 1603-1605. **616**

This instrument differs from the ordinary type of piston syringe in two principal respects: the action of the plunger can be controlled by a screw collar; a rubber collar in a screw collet permits the attachment of pipettes The main purpose of the instrument is to provide accurate control over micro-pipettes.

—L. M. MARKSON.

BOSSHART, J. K. (1950.) **A new instrument for the surgical treatment of teat obstruction.** —*Cornell Vet.* **40.** 124-126. **617**

B. advocates the use of a spiral curette which resembles a twist drill tapered to facilitate introduction. Obstructions at all levels in the teat may be treated and corrosive chemicals such as glacial acetic acid may be used directly after curettage to control excessive granulations.—K. G. TOWERS.

See also abstr. 305 (fluoromicroscopy); 495 (tonooscillography); 562 (artificial kidney).

MISCELLANEOUS

SHIMKIN, M. B. (1947-48.) **The Academy of Medical Sciences, USSR.** — *Amer. Rev. Soviet Med.* **5.** 82-89. **618**

This Academy, established in 1944, is the highest scientific institution in the field of medicine in the U.S.S.R., and submits its annual reports to the People's Ministry of Public Health. Among its purposes are: con-

tributing to the continued growth of medical sciences in conformity with the needs of public health; co-ordination of the work of the medical scientific institutions; approving of major discoveries in medicine and resolving questions of their practical application; training scientific workers in medicine. There are three types of members: active (full), honorary, and corresponding. In 1946 the Academy had under its jurisdiction 22 research institutes; these are listed, with the names of their directors. It published a periodical, *"Vestnik"*. Each institute has the right to publish journals or monographs in its own field. A recent major assignment of the Academy was to develop the Five Year Plan in medical research at its institutes.

—W. R. BETT.

WAKSMAN, S. A. (1947.) **Microbiology in the Soviet Union.**—*Amer. Rev. Soviet Med.* **4.** 314-321. **619**

Some impressions are given of a visit in 1946 to microbiological laboratories in Moscow, and a brief account is included of the bacteriologist L. S. Tsenkovski, the microbiologist Vinogradski, and of the work on viruses by Ivanovski, Ryzhkov, Smorodintsev, and Silber. The Institute of Antibiotics is under the control of the Ministries of Public Health and Medicinal preparations. W. was surprised to find that not only were the Russian microbiologists producing large quantities of vaccines, sera, etc., for the control of human and animal diseases, but that they had also made an impressive start in new fields such as antibiotics.—W. R. BETT.

REPORTS

GREAT BRITAIN. (1950.) **Annual Report of the West of Scotland Agricultural College, Glasgow, 1948-1949.** pp. 61. [Items of veterinary interest pp. 37-39 & 40-46.] Stirling: Jamieson & Munro Ltd. **620**

In the Animal Husbandry Section, studies included the effect of nutrition on the health and milk yield of dairy cows and on the health and growth of their calves. It was found that cows fed large quantities of grass silage or dried grass bore healthier calves than those fed on the traditional diet. Surplus colostrum collected from Auchencruive Farm was used for calf feeding intermittently together with whole milk. The calves did as well as normally fed calves but made no abnormal gains in weight and their health and general condition remained good. Even in older calves the feeding of colostrum did not cause excessive "scouring". The practice is considered to be economically sound and would save ordinary milk.

The control of sheep tick on hill lambs and the influence of dietary lead on the production of SWAYBACK were also studied.

The Veterinary Investigation Officer carried out several field investigations, such as on *Paramphistomum cervi*, a trematode found in the rumen of cattle and sheep. In cattle in the Isle of Mull its presence was associated with losses. Investigation was also made on myeloid leucaemia in cattle, on husk, copper deficiency and on many other problems affecting both cattle and sheep.

Research was carried out and a paper prepared based on collaborative work extending over the last three years, by Malcolm of the Bacteriological Department, McFarlane & Blackburn of the Royal (Dick) Veterinary College and the Veterinary Investigation Officer, on the diagnostic value of the cell count and culture tests to determine whether pathogenic bacteria were present in so-called non-specific mastitis. It was found that more than half the early cases of mastitis may escape detection when laboratory diagnosis is based solely on culture tests of the milk.

A survey on FLUOROSIS led to some interesting results indicating the impossibility for most farmers adjacent to some factories of raising their own young stock free from DENTAL FLUOROSIS. Surveys were also made on BRACKEN POISONING, dropsical calves, ACETONAEMIA in dairy cattle, tests on the efficiency of a 10% dibutylphthalate salve against sheep tick and also a survey on farm buildings.

—D. S. RABAGLIATI.

AUSTRALIA, Western Australia. (1948.) **Annual report of the Department of Agriculture for the year ended 30th June, 1947.** [HAY, G. K. B.] [Items of veterinary interest pp. 11-13.] Perth: W. H. Wyatt. **621**

Veterinary research has continued to give chief attention to the problems of infertility and other reproductive abnormalities affecting sheep grazed on pastures dominated by subterranean clover. Studies on the chemical nature and incidence of the potent substance (an oestrogen) in *Trifolium subterraneum* and of its clinical and pathological effects were continued.

There is a list of diseases diagnosed during the year. Some unusual parasitic conditions are noted and include DERMATITIS IN POULTRY caused by a mite, *Rivoltsia bifurcata*, hitherto

not recorded in Australia, and INFESTATIONS OF PIGEONS with *Falculifer rostratus* and *Ornithostrongylus quadriradiatus*.

There are statistical data on the numbers of domestic livestock in the state.

—M. McL. GORDON.

LEEWARD ISLANDS. (1949.) **Report of the Director of Agriculture for the year 1948.** [ALLNUTT, R. B.] pp. 74. [Items of veterinary interest pp. 18-20.]—*Rep. Dep. Agric. Leeward Is.* 622

At Antigua the general health of the animals remained good. The four dipping tanks of the Government were used, but funds did not allow of the construction of a fifth. From May 1st, the Department was without a veterinary officer, but veterinary attention was given when required by a practitioner.

At St. Kitts-Nevis, mechanization has greatly reduced the livestock on the estates. In February ANTHRAX made its appearance and the Island was proclaimed an infected area, when a vaccination campaign was conducted by the veterinary officer. The death rate among the cattle was high.

At Monserrat, both meat and milk supplies were inadequate.

In the Virgin Isles the general health was good. Exports of livestock were 957 cattle, 463 sheep, 2,259 goats, 784 pigs, three horses and 1,573 poultry. There was a falling off of the number of cattle and poultry exported compared with previous years.—D. S. RABAGLIATI.

EIRE. (1949.) **Eighteenth Annual Report of the Minister for Agriculture, 1948-49.** pp. vi + 183 + [85]. [Items of veterinary interest pp. 36, 37, 40-49, 81-96.] Dublin: The Stationery Office. 5s. 623

237 veterinary lectures were given to farmers and stock owners in all parts of the country. The Department investigated deaths among cattle in County Clare which were chiefly found to be due to parasitism; 3,200 cattle were treated with phenothiazine and hexachlorethane with most satisfactory results.

The Veterinary College of Ireland received 49 fresh students and the R.C.V.S. conducted the professional examinations. The degrees of B.Vet.Sc. can be obtained at the National University of Ireland when a student has obtained the M.R.C.V.S. and at the University of Dublin the degree of B.Sc. (Vet.) is conferred on students who obtained their B.A. and the M.R.C.V.S. The Pathological Department examined 1,875 specimens, 997 from cattle, 282 from horses, 240 from dogs, 152 from pigs, 25 from cats, 43 from sheep and 136 from miscellaneous animals. The Department of Parasitology examined 276 specimens and 18 species of cysticercus bovis were identified and a fluke, *Paramphistomum cervi*, previously believed to occur in tropical or sub-tropical countries only, occurring in the first two stomachs of ruminants was found in Ireland for the first time. Twelve different cases from cattle from different parts of the country were met with during the year.

The Clinical Department treated 7,228 day patients, 394 hospital and 410 external patients, ranging from 1,378 horses to one sea lion.

The work of the Veterinary Research Laboratory may be summarized under the following heads: Diagnosis and Advisory Section; Vaccine and Bovine Infertility Section; Parasitology Section; Mastitis Section; Biochemistry Section; Special Investigations. 1,132 specimens were examined for TB., 766 sent in by veterinary practitioners of which 633 (82·63%) were positive and of 366 milk samples examined, 8 (2·18%) were found to contain tubercle bacilli. Vaccines were prepared for BLACKLEG, BRAXY and for BRUCELLOSIS. Experiments were also carried out on the use of hexachlorethane for the treatment of FASCIOLIASIS IN CATTLE and tests of a single dipping for the cure of SHEEP SCAB, using benzene hexachloride (1 lb. to 40 gal. of water) gave almost spectacular results. PLANT POISONING and BOVINE STERILITY were investigated.

The report on the biochemistry section deals with work on: A Survey of APHOSPHOROSIS IN CATTLE; BRACKEN POISONING IN CATTLE; "OEDEMA DISEASE" IN PIGS; analyses for veterinary practitioners; the elaboration of a diffusion method for the detection of acetone in milk.

—D. S. RABAGLIATI.

BOOK REVIEWS

AZZI, A. (1948.) Microbiologia e immunologia. [**Microbiology and immunology.**] [3 Volumes.] Vol. I. pp. xiv + 585; Vol. II. pp. viii + 800; Vol. III. pp. xi + 841. Milano: Francesco Vallardi. L. 12.200. 624

The author presents a third edition of his Microbiology and Immunology. He has enlarged the book by the addition of new material, particularly in relation to the fungi and viruses, and laboratory technique. Unfortunately he has not cut out much that is outdated, with the result that the book has become unwieldy. Such descriptions as those of the historical methods of growing anaerobic bacteria might have been

omitted with advantage. The inclusion of 357 different types of nutrient media is certainly comprehensive, but surely unnecessary. The book seems to have been written mainly for medical students, but it includes descriptions of plant, soil bacteria and of pathogeny for animals. There is, however, little detail, and there are serious omissions in the veterinary field.—I. W. JENNINGS.

GRAHAM, R. M., et al. (1950.) **The cytologic diagnosis of cancer.** pp. xiii+229. Philadelphia & London: W. B. Saunders Co. 33s. 625

This is a well produced and lavishly illustrated book on the diagnosis of cancer by the "smear technique". The book consists of a collection of photomicrographs with explanatory text. There is an extensive bibliography.

Although the photographs and diagrams are clear, there is little correlation of cytology and clinical aspects. Details of individual cases are not given and one cannot assess the accuracy of this method of cyto-diagnosis. The addition of clinical data together with photographs illustrating the histopathology would have made the book more valuable.

The section on the technique of preparing and staining the smears is good. The chapters dealing with the examination of pleural and ascitic fluids will be of interest to the veterinary pathologist.—A. R. JENNINGS.

PRATT, R. [Ph.D. Associate Professor of Pharmacognosy and Plant Physiology, Univ. of California College of Pharmacy.] DUFRENOY, J. [D.Sci. (Paris). Research Associate in Antibiotics, Univ. of California College of Pharmacy.] (1949.) **Antibiotics.** pp. xi+255. Philadelphia; London & Montreal: J. B. Lippincott Co. 40s. 626

General concepts of antibiotics and of the diffusion of antibiotics are mentioned. A chapter is devoted to the industrial production of these compounds. The more important antibiotics (penicillin, streptomycin, chloromycetin, aureomycin, polymyxin and tyrothricin) are discussed separately. The biosynthesis of these compounds, their extraction, purification and stability are described. Factors influencing their action and their various chemotherapeutic uses are mentioned. Finally a chapter is devoted to the mechanism of antibiotics. This book is easy to read and will prove useful to all interested in this field.—E. EDEN.

CARTER, C. W. [M.A., B.M., B.Ch. Fellow of Queen's College, Oxford.] THOMPSON, R. H. S. [M.A., B.Sc., D.M. Guy's Hospital Medical School.] (1949.) **Biochemistry in relation to Medicine.** pp. xi+442. London: New York: Toronto: Longmans, Green & Co. 25s. 627

This is a carefully and conscientiously written book of great value to those interested in the applications of biochemistry to medicine. There are rather short and introductory chapters on pH and its measurement and on the chemistry of carbohydrates, lipoids and proteins. Enzymes and biological oxidations are discussed at greater length and there are also discussions on the chemistry of food stuffs, the carbohydrate metabolism and vitamins. Substances present in the bile are dealt with, as are gastric, liver, pancreatic and kidney functions. There are valuable appendices on the identification of substances of biological importance. Experiments suitable for teaching purposes are included at the ends of the chapters and have been based on those carried out in the medical and honours physiology courses at Oxford.

The book will prove of great value to those interested in teaching biochemistry and its applications to many medical problems.

—J. M. ROBSON.

HABEL, R. E. [D.V.M., M.Sc. Associate Professor of Veterinary Anatomy, New York State Veterinary College.] (1949.) **Guide to the dissection of the cow.**—pp. vi+127. Ithaca, New York: Cornell Cooperative Society. 628

The New York State Veterinary College, appreciating the economic importance of the ruminant, now includes in its course a period of about one hundred hours for the dissection of the cow. This book has been produced as a companion text and, as such, is very good. The animal is dealt with by regions and at all times emphasis is placed upon points of clinical and physiological importance. The approach and general treatment of material is sound and the book will repay study by all interested in veterinary anatomy.—R. N. SMITH.

ZIETZSCHMANN, O. & NICKEL, R. (1949.) Anleitung zum Präparieren. [**A dissection guide for veterinary students.**]—pp. viii+179. Hannover: M. & H. Schaper. 3rd Edit. DM. 8.-. 629

This third edition of this book differs little from the others. It is intended as a guide for use with an accredited textbook, but the shortage of textbooks in post-war Hanover, which prompted the same authors to prepare a synopsis of veterinary anatomy, limits its value. However, the intelligent dissecter with a know-

ledge of German and general knowledge of biology would find it of extreme value.

It introduces dissection as a discipline and proceeds by giving precise instruction as to the means of exposing and identifying the various structures. By way of reminder, each system in every region commences with a list of the structures to be investigated. A similar book in the English language would not be out of place.—C. W. OTTAWAY.

MEESSEN, H. & OLSZEWSKI, J. (1949.) Cytoarchitektonischer Atlas des Rautenhirns des Kaninchens. **[A cytoarchitectonic atlas of the rhombencephalon of the rabbit.]** pp. 52. Basel, New York: S. Karger. Swiss fr. 50.-. [In German and English.] **630**

This atlas has been produced in an attempt to localize certain areas in the brain of the rabbit into cytoarchitectonic units. Selected sections stained by cresyl violet are used to classify the cells by their structure and an accumulation of the same kind, or a constant combination of two or more kinds of cell, constitutes a unit. The excellent photographs (15 plates and over 60 smaller views) are adequately described, using the old customary names as far as possible. Magnifications are given for each picture and where necessary superimposed networks of borderlines are used to aid orientation. The work ends with a systematic synopsis of individual nuclei. There is no doubt that all engaged in comparative physiological-morphological investigations of the central nervous system will find this a very useful guide.—R. N. SMITH.

CUBONI, E. (1949.) La diagnosi di gravidanza negli animali mediante le reazioni biologiche e chimico-ormonali. **[Pregnancy diagnosis in animals by means of biological and chemico-hormonal tests.]**—pp. 238. Milan: Istituto Sieroterapico. **631**

The author, who in 1934 developed the now well-known rapid and reliable chemical test for pregnancy in the mare based on the presence of oestrogen in the urine, has for many years carried out much research into methods of pregnancy diagnosis in the mare and cow, and his book will be of great interest to all veterinary research workers and practitioners concerned with this subject. The book consists of 218 pages of text and is divided into the following chapters: Sex hormones and methods of demonstrating them in body fluids; Sex hormones in equines; Laboratory methods of pregnancy diagnosis in the mare and ass; Sex hormones in the cow; Laboratory methods of pregnancy diagnosis in the cow; Pregnancy tests in other species. These headings give a good indication of the scope of the book. Since there exists only one other book dealing with the subject [see COWIE, A. T. *V.B.* **19. 247.**], a comparison of the two may be helpful. While it is inevitable that the two books cover in part the same ground, their general purpose and their nature appear to be essentially different. Cowie's book was intended as a guide to the literature on pregnancy tests (irrespective of their practical value), whereas, in the present book, Cuboni has focused his attention on biological and chemico-hormonal tests of proved value and in doing so has discussed in full the results obtained by various investigators and has described in detail the laboratory techniques of carrying out the tests. In short, the two books may be said to be complementary.

Most of the tests described in the book have already been published, but the description on pages 129–132 of the author's test for gonadotrophins in the urine of the mare from about the 55th to 120th day of pregnancy, based on the injection of extracts of the urine (kaolin absorption technique) into rabbits, will be new to most research workers.

The material is well arranged and presented, while the tables and figures have been judiciously employed to summarize the data under discussion. Exception may, however, be taken to Figure 26, which is inaccurate and misleading and was criticized on this account as long ago as 1935 by Kober. There is an adequate bibliography with titles of over 700 references.

This is a book which can be recommended without reserve to all interested in pregnancy tests in the domestic animals.

—ALFRED T. COWIE.

COMROE, J. H., JR. [Editor-in-Chief.] (1950.) **Methods in medical research. Vol. 2.**—pp. xvi+361. Chicago: The Year Book Publishers, Inc. $6.50. **632**

This is the second volume of a series, the first of which was reviewed in this Bulletin [*V.B.* **19. 454**]. The object of the series is to bring together information on methods and technique used in investigation of various problems. Sixty workers have contributed to this volume, which deals with (1) methods of study of bacteriophages (2) pulmonary function tests (3) assay of hormone secretions.

In each of these three sections there are many papers giving clear descriptions of techniques with some appraisal of their value. A very useful compilation.—M.C.